

Catalogue of the papers and correspondence of

Albrecht Fröhlich FRS

(1916-2001)

DRAFT

by Timothy E. Powell and Peter Harper
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LONDON

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GENERAL INTRODUCTION

PROVENANCE

The archive was received for cataloguing from Dr Ruth Fröhlich, widow of Albrecht Fröhlich, in February 2005 and April 2007.

OUTLINE OF THE CAREER OF ALBRECHT FRÖHLICH

Fröhlich was born on 22 May 1916 in Munich, Germany to Julius and Frieda Fröhlich. The family were Jewish and Julius Fröhlich was a cattle merchant. Albrecht was the youngest of three children. The eldest, his sister Betti, settled in Palestine in the 1920s and his elder brother Herbert was to become a distinguished physicist. After elementary school Fröhlich went to the Wittelsbacher Gymnasium but with the rise to power of the Nazis Fröhlich and his parents left Germany for France in 1933, and the following year moved to Palestine to join Betti (Herbert had gone to the University of Leningrad in 1934, then to the University of Bristol in 1935). In Palestine Fröhlich worked as a plumber and then as an electrician in a railway workshop.

Fröhlich had ended his formal education at the age of seventeen when he fled Germany. However, in 1945 Herbert, now Reader in Physics at the University of Bristol, arranged for his younger brother to join him at Bristol. Fröhlich was accepted as a student and began his studies in mathematics in December 1945. He graduated with First Class Honours in 1948 and began post-graduate research under H.A. Heilbronn. Fröhlich completed his doctoral thesis in October 1950 (Ph.D. awarded 1951). While an undergraduate at Bristol Fröhlich met a medical student, Ruth Brooks, whom he married in 1950. She became a doctor in general practice, while also accompanying her husband on many of his visits abroad and bringing up their children.

Fröhlich was Assistant Lecturer in Mathematics at the University of Leicester 1950-1952 and Lecturer in Pure Mathematics at the University College of North Staffordshire 1952-1955. In 1955 he was appointed Reader in Mathematics at King's College London. Subsequently he became Professor of Mathematics at King's (1962), Head of Department (1969) and, on retirement, Emeritus Professor (1981). He remained active in post-retirement research and appointments included Fellowship of Robinson College, Cambridge in 1982 (Emeritus Fellow 1984) and a Senior Research Fellowship at Imperial College London 1982. During his career Fröhlich held numerous Visiting Professorships, enjoying a particularly close relationship with the University of Bordeaux (Visiting Professor 1975 and 1984). He also made many conference visits to the USA, Germany and France.

Fröhlich's contributions to algebraic number theory and to mathematics more widely were acknowledged in the citation for the de Morgan Medal of the London Mathematical Society, awarded in 1992 (A.34).

'His research is characterised by a prodigious flow of highly original ideas, which still shows no sign of stopping. His work includes such topics as class two nilpotent Galois groups, class groups of abelian fields, genus theory, quadratic forms and orthogonal representations, and local Langlands theory. However, without any doubt his most important achievement is the creation of that body of knowledge now known as arithmetic Galois module theory: this seeks to exploit and develop the mysterious and wonderful relationship between certain analytic invariants, called Artin root numbers, and the purely arithmetic problem of determining the structure of the ring of integers of a Galois extension of number fields over the integral group ring of the Galois group. Although there were a few previous results due to Hilbert and Noether, the subject really took off with Fröhlich's seminal work on tame H_S -extensions. Building on this, he then proceeded to develop a general theory and, in the process, produced a whole fund of new ideas and techniques. Through his work and direction this subject has helped keep British number theory at the forefront of mainstream research.

Fröhlich has greatly influenced the development of algebraic number theory in many ways; he has published seven books, written over a hundred papers and, jointly with J.W.S. Cassels, he organised the renowned Brighton conference which did so much to make class field theory more widely accessible.

Special mention should be made of the help and encouragement that he has consistently given to young mathematicians: in addition to his many own research students, there have been many French and German students to whom he has provided considerable help. His enthusiasm and love for mathematics are a source of inspiration to all who have worked with him'.

In addition to the de Morgan Medal of the London Mathematical Society, he had also received the Society's Senior Berwick Prize in 1976. Fröhlich received honorary doctorates from the universities of Bordeaux (1986) and Bristol (1998) and the Alexander von Humboldt Foundation Humboldt Research Award for the Scientific Cooperation between Great Britain and Germany in 1992. He was elected a Fellow of the Royal Society in 1976. He died 8 November 2001.

For a full account of Fröhlich's life and works see 'Albrecht Fröhlich (22 May 1916 - 8 November 2001)' by B.J. Birch and M.J. Taylor, *Biographical Memoirs of Fellows of the Royal Society* vol 51 (2005), 149-168. A copy is at A.6.

DESCRIPTION OF THE COLLECTION

This collection dates entirely from the period after Fröhlich's arrival in Britain in 1945. It is particularly rich in documenting his mathematical researches, including mathematical workings, publications and correspondence with colleagues.

Section A, Biographical, includes obituaries and memoirs, material from the Celebration of Fröhlich's life, held in the Chapel of Robinson College Cambridge, 10 February 2002, and other tributes. The career, honours and awards subsection includes his Ph.D. thesis 'On some topics in the theory of representation of groups and in class field theory', and correspondence and papers relating to his university appointments and some of his principal honours, including election to the Fellowship of the Royal Society.

Section B, Research, is chiefly mathematical workings, notes and drafts, mostly manuscript but some typescript, presented as far as possible in alphabetical order by heading or topic. Some of the material was found in titled folders or envelopes, but much was loose. The material often comprises a number of short paginated sequences, and it is possible some were written as early drafts for publication. Few are dated but the span appears to cover Fröhlich's research career and includes work on Galois module theory and Gauss sums. The largest component is material relating to work on the decomposition of primes. Although undated this appears to be work probably begun in the 1950s.

Section C, Publications, presents comprehensive documentation of Fröhlich's published output, from his first article 'The representation of a finite group as a group of automorphisms on a finite Abelian group', *Quarterly Journal of Mathematics* 2nd ser. vol. 1 (1950), to 'Equivariant Brauer groups' (with C.T.C. Wall), *Contemporary Mathematics* vol. 272 (2000). The largest single body relates to 'Strict factorisability and shadows', in *Algebra and Number Theory, Essen 1992* (ed. G. Frey and J. Ritter), 1994. References are made to the Bibliography at A.16 in the form Bibliog. no. ... The material mainly takes the form of offprints, but there are also some drafts of papers and occasionally accompanying mathematical workings. The section also includes a few unpublished drafts, including work with C.T.C. Wall on Brauer groups, 'Galois modules and the functional equation', and a possible draft of a book on 'mathematical theory of ostensive and consequently of empirical predicates'.

Section D, Visits, conferences and lectures, provides patchy coverage of Fröhlich's conference attendance and overseas visits 1956-1998 but includes documentation of his participation in influential mathematics meetings held at the Mathematisches Forschungsinstitut, Oberwolfach, Germany and some Visiting Professorships. The material in the main comprises invitations and programmes, and texts or abstracts of lectures delivered are few.

Section E, Correspondence, is arranged in an alphabetical sequence. It is international in scope, with many correspondents from North America, France and Germany. Correspondents particularly well

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represented include Fröhlich's Ph.D. supervisor H.A. Heilbronn, colleagues J.-P. Serre, Olga Taussky-Todd, S.V. Ullom and C.T.C. Wall, and former research students C.J. Bushnell, M.J. Taylor and S.M.J. Wilson. Many of the letters focus on progress of research and include discussions of problems with mathematical workings, sometimes as separate documents, and drafts of papers. Although the correspondence spans 1950-2000, the bulk dates from the 1970s-1990s.

Section F, Theses and examinations, comprises a set of theses of Ph.D. students supervised or examined by Fröhlich, including his research students at King's College (see list at F.29), together with a number of examination papers, some with Fröhlich's manuscript calculations of answers.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

We are grateful to Dr Ruth Fröhlich for making the archive available.

Timothy E. Powell
Bath 2007

SECTION A	BIOGRAPHICAL, A.1-A.37	1948-2006
A.1-A.7	OBITUARIES AND MEMOIRS	2001-2006
	Fröhlich died on 8 November 2001.	
A.1	Obituaries from <i>The Times</i> , 30 November 2001; and <i>Independent</i> , 24 December 2001, by V. Armitage (including typescript drafts, and print-out of online version)	2001
A.2	Obituary for the Heidelberg Academy of Sciences, 8 March 2002, by P. Rocquette (German and English versions); draft obituary for University of Bristol Convocation Yearbook, ?2002; obituary for King's College London, ?2002; letter to Colin ?Bushnell re draft obituary for 'In Touch', King's College London newsletter, which may relate to preceding	2002
A.3	Online obituary by J.J. O'Connor and E.F. Robertson from MacTutor History of Mathematics (http://www-history.mcs.st-andrews.ac.uk/Biographies/Frohlich.html)	2006
A.4-A.6	'Albrecht Fröhlich (22 May 1916 - 8 November 2001)' by B.J. Birch and M.J. Taylor, <i>Biographical Memoirs of Fellows of the Royal Society</i> vol 51 (2005), 149-168	2005
A.4, A.5	Typescript drafts 2 folders.	
A.6	Offprint	
A.7	'Albrecht Fröhlich 1916-2001' by M.J. Taylor, <i>Bulletin of the London Mathematical Society</i> vol 38 (2006), 329-350 Offprint	2006
A.8-A.14	MEMORIAL SERVICE AND OTHER TRIBUTES	2001-2006
A.8	Fröhlich family letter of thanks for condolences received on Albrecht Fröhlich's death With two letters of condolence.	2001
A.9-A.11	'Celebration of the life of Ali Fröhlich', The Chapel, Robinson College Cambridge, 10 February 2002	2002
A.9	Draft and printed Order of Service	
A.10	Tributes to Fröhlich from colleagues L. McCulloh, P. Cassou-Noguès, J. Ritter, V. Armitage, C.B. Thomas.	
A.11	Correspondence arising Also includes copy of programme for Robinson College Music Society 'Steinway Concert', 23 June 2002, featuring 'The Fröhlich Trio' that was formed at the service on 10 February.	

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- A.12 Report by M.J. Taylor on February 2002 Oberwolfach Conference on Orders in Arithmetic and Geometry, dedicated to the memory of Fröhlich, London Mathematical Society newsletter, April 2002 2002
- A.13 'ε-constants and equivariant Arakelov-Euler characteristics', *Ann. Scient. Éc. Norm. Sup.*, 4th ser. vol. 35 (2002) by T. Chinburg, G. Pappas and M.J. Taylor, 'Dedicated to the memory of Ali Fröhlich (1916-2001), for his vision, inspiration and encouragement' 2002, 2005
- Letter to Ruth Fröhlich from C.B. Thomas, 2005, referring to dedication of his book *Representations of Finite and Lie Groups* to Albrecht Fröhlich.
- A.14 Fröhlich Prize 2002, 2006
- This prize, to be awarded by the London Mathematical Society for 'new, original and extremely innovative work in Mathematics' was established by Ruth Fröhlich in line with her husband's wishes after his death.
- Correspondence *re* establishment of prize, 2002, and winner for 2006 (M. Weiss).
- A.15-A.18 AUTOBIOGRAPHICAL 1960s-2002**
- A.15 Curricula vitae 1960s, 1990s
- A.16 Bibliography 2000
- This bibliography has been used in referencing the publications in section C.
- Manuscript list of books by Fröhlich.
- A.17 Copy of Fröhlich's entry for Personal Records of Fellows of the Royal Society; copy of citation of election (1976) 1976, 1987
- A.18 Entry for Fröhlich for *International Who's Who* 2002 2002
- A.19-A.35 CAREER, HONOURS AND AWARDS 1948-2005**
- A.19, A.20 Student, University of Bristol 1948-1950
- Fröhlich came to Bristol at the end of the Second World War at the suggestion of his brother Herbert who was Reader in Physics at the University.
- Although Fröhlich had ended his formal education at the age of seventeen he was accepted as a student and began his studies in mathematics in December 1945. He graduated in 1948 and began doctoral research under H.A. Heilbronn. Fröhlich completed his Ph.D. thesis in October 1950 (awarded 1951).

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A.19	Later account of arrival in Bristol in 1945 (photocopied manuscript); notification of award of John Stewart Scholarship 1948-1949; testimonials by E.H. Linfoot and H.R. Hassé; etc.	1948-1950
A.20	‘On some topics in the theory of representation of groups and in class field theory’, Ph.D. thesis, October 1950	1950
A.21	Assistant Lecturer in Mathematics, University of Leicester Correspondence <i>re</i> appointment.	1950-1951
A.22	Lecturer in Pure Mathematics, University College of North Staffordshire, Keele Correspondence <i>re</i> appointment.	1951-1952
A.23	Appointments at King’s College London Reader in Pure Mathematics (1955), Professor of Mathematics (1962), Head of Department (1969), Emeritus Professor (1981). Correspondence <i>re</i> appointments.	1954-1981
A.24-A.27	Election to the Fellowship of the Royal Society, 1976 Fröhlich’s citation noted, ‘Distinguished for his work in algebra and in particular in algebraic number theory. He made his reputation for his contributions to a variety of areas such as “effective procedures”, near-rings, homological algebra and in particular to class-field theory in a non-Abelian context. His recent investigations of the module-structure of algebraic number-fields and the discovery of a totally unsuspected relation (in part conjectural) with the behaviour of the associated zeta- and L-functions has attracted widespread interest’. See also A.17.	1964-1977
A.24	Correspondence <i>re</i> proposal	1964, 1968
A.25	Notification in press; list of Fellows elected 1976	1976
A.26, A.27	Letters of congratulation In chronological order. Not indexed. 2 folders.	1976-1977
A.28	London Mathematical Society Senior Berwick Prize for 1976 Correspondence <i>re</i> arrangements for presentation.	1976
A.29	Election to Fellowship, Robinson College Cambridge Notice from King’s College London.	1982

A.30	Leverhulme Emeritus Fellowship	1984-1989
	Fröhlich was awarded a Fellowship to support his ongoing research into Galois Gauss sums.	
	Includes draft of application for Fellowship 1984, and Report to the Leverhulme Trust 1987.	
A.31	Honorary Doctorate, University of Bordeaux, March 1986	1986
	Notice, letter of congratulation.	
A.32	Senior Research Fellow, Imperial College	1988-1996
	Correspondence <i>re</i> appointment.	
A.33	Alexander von Humboldt Foundation Humboldt Research Award for the Scientific Cooperation between Great Britain and Germany, 1992	1992, 2001
	Fröhlich received the award 'in recognition of your past accomplishments in research and teaching'.	
	Correspondence.	
A.34	London Mathematical Society de Morgan Medal for 1992	1992, 1993
	Fröhlich received the medal 'for his many important contributions to algebraic number theory...his most important achievement is the creation of that body of knowledge now known as arithmetic Galois module theory'.	
	Notification; short citation; full citation (in volume 25 (1993) of the <i>Bulletin of the London Mathematical Society</i> pp.412-414); letters of congratulation (in chronological order, not indexed).	
A.35	Honorary Doctorate, University of Bristol	1998, 2005
	Includes Order for Degree Congregation, 6 July 1998 and text of speeches for Honorary Graduands (see pp.25-26 for speech commending Fröhlich, by A.H. Schofield).	
A.36, A.37	MISCELLANEOUS	N.d.,1974, 1975, 1981
A.36	Photocopy of photograph of Fröhlich lecturing at blackboard; correspondence from Carleton University, Ottawa, Canada <i>re</i> use of photograph of Fröhlich, 1974	N.d.,1974- 1975
A.37	'University cuts', Letter published in <i>The Times</i> , 26 March 1981	1981
	Typescript letter as sent; published letter.	
SECTION B	RESEARCH, B.1-B.101	?1950s- 1996, n.d.

This section is chiefly manuscript mathematical workings, notes and drafts presented as far as possible in alphabetical order by heading or topic title. Some were found in titled folders or envelopes, but much was loose. The material often comprises a number of short paginated sequences, and some may have been written as early drafts for publication. Few are dated.

Fröhlich's handwriting, as he himself acknowledged in correspondence with colleagues, is not always easy to decipher. This becomes more problematic where the material is in rough form and evidently intended for his use only.

B.1	<p>'Absolute conductor & resolvent theory'</p> <p>Contents of folder so inscribed.</p>	N.d.
B.2	<p>'On algebraic closure'</p>	N.d.
B.3-B.8	<p>'Archimedean theory etc' and 'Norms'</p> <p>Bundle of folders so labelled. Some of the folders were themselves inscribed and the contents in some cases further subdivided.</p>	ca 1965
B.3	<p>'Archimedean theory. Duality in real vector spaces'</p>	
B.4	<p>'Geometry of numbers'</p>	
B.5	<p>'Norms of operators' and 'Characters with transformations'</p>	
B.6-B.8	<p>'Norms'</p> <p>3 folders.</p>	
B.9	<p>'Some remarks on Artin conductors'</p> <p>10pp typescript.</p>	N.d.
B.10, B.11	<p>'Relative Brauer + Picard groups' and 'Various results for change of rings'</p> <p>Contents of folder so inscribed. Some workings dated 1969.</p> <p>2 folders.</p>	1969, n.d.
B.12	<p>'A canonical class for Galois extensions of number fields'</p> <p>Manuscript and typescript workings so titled; typescript pages and manuscript and photocopied manuscript notes found therewith.</p>	N.d.
B.13	<p>'Canonical factorisation and Martinet's conjecture'</p> <p>Photocopy manuscript workings so titled, 9pp and 14pp.</p>	N.d.
B.14	<p>'Notes for further work on conductors'</p>	N.d.

	Contents of folder so inscribed.	
B.15-B.31	Decomposition	?1950s
	Bundle of folders inscribed 'Dec', 'Decomp' and similar: work on the decomposition of primes.	
	This was work begun by Fröhlich in the 1950s and some of the material appears to have been drafted with publication in mind.	
B.15	'Decomp. 1 draft. A Fröhlich'	
B.16	'Drafts, decomp.'	
B.17	'Dec. Chpt. 3'	
B.18	'Dec. Chp 4'	
B.19-B.22	'Final draft. Prime decomposition [...]	
	4 folders.	
B.23	'Dec.'	
B.24	'Decomposition. Numerical examples'	
B.25	'Dec. (a) p-adic problem. (b) local fields for $p+2$ '	
B.26, B.27	'Dec. details'	
	With later manuscript note 'explicit calculations in number field extensions [...]'. Original folder (retained at B.27) bears mathematical working.	
	2 folders.	
B.28-B.30	'Notes for dec. paper'	
	3 folders.	
B.31	'Dec. Local fields over R_2 '	
	With later manuscript note 'Extensions of R_2 of certain [unipotent] classes: explicit calculations'.	
B.32	'On the density of discriminants of cubic fields II'	N.d.
	Typescript note with manuscript annotation.	
B.33	'§ 2 The class of a principal factorisation'	N.d, 1996
	Photocopied manuscript and typescript draft; 4pp typescript 'printout'; manuscript workings.	

B.34, B.35	'First write-up concerning factorisibility' 2 folders.	N.d.
B.36-B.38	'Fields over P_2 ' Original folder (retained at B.38) bears mathematical working. 3 folders.	N.d.
B.39	Manuscript and photocopied manuscript workings, first page beginning 'Notions of a filtered ring [...]'	1969
B.40	'1 Finite fields' Photocopied manuscript working.	N.d.
B.41	Manuscript working, first page beginning ' Γ a finite group, B_Γ its Burnside ring [...]' Includes 'Examples (Γ always finite), 20pp.	N.d.
B.42	Manuscript and photocopied manuscript workings, with later covering note 'handwritten part of papers' <ul style="list-style-type: none"> • Galois Gauss sums – resolvents • Galois stabil lattices' First page is inscribed 'Olga'.	N.d.
B.43	'Gal. Gauss Notes'	N.d.
B.44	6pp typescript progress report on work on a Galois extension N/K of number fields; manuscript working beginning 'Here N/K is a Galois extension of fields'.	1993
B.45	'On wild Galois extensions of number fields'	N.d.
B.46	'Reformulation of some results on Galois module structure' Manuscript and typescript drafts marked '(Informal circulation only)'.	N.d.
B.47	'§ 2 Introduction to Gauss sums' 39pp manuscript working.	N.d.
B.48	'Gauss sums' Typescript draft, 'This is a report on some aspects of joint work with C.J. Bushnell' (may relate to <i>Gauss sums and p-adic division algebras</i> , at C.78).	ca 1983
B.49	'A programme for elliptic Gauss sums' This may have been intended for delivery as a lecture.	N.d.
B.50	'Wild Gauss sums'	1993

B.51, B.52	'Genus class freq.'	N.d.
	Contents of folder so inscribed divided into two for ease of reference.	
B.53-B.55	'Graded categories'	N.d.
	Contents of envelope so inscribed divided into three for ease of reference.	
B.56-B.58	'Gras conjecture'	1989, 1990
	Contents of folder so inscribed divided into three for ease of reference.	
	Includes correspondence with T.C. Chinburg and D. Burns <i>re</i> work on the Gras conjecture, with manuscript workings by Fröhlich.	
B.59	Untitled manuscript working beginning 'The idele group of a number field E'	N.d.
B.60	'Integral or Radical modules. $I<x, y>^s$. Functions based on Resolvents'	N.d.
	Contents of folder so inscribed, further subdivided internally according to the folder inscription.	
B.61	'l-adic theory'	1988
	With later manuscript note 'AF has defined his <u>regulator</u> , see the appr Crelle [<i>Crelle's Journal</i>] paper. This seems to be related (and earlier)'.	
B.62, B.63	'Local classfields and C.M.'	N.d.
	Contents of envelope so inscribed divided into two for ease of reference.	
B.64	'Some comments on the map t'	ca 1980
	7pp typescript.	
	With later manuscript note.	
B.65, B.66	'[...] Categories of modules'	N.d.
	2 folders.	
B.67	'"Monomial" Conductor'	N.d.
	1p only.	
B.68-B.70	'Norms write up Jan 77' and 'Main write up'.	1977
	Contents of folder so inscribed.	
B.68	55pp typescript with list of contents	

B.85	'Weak equivalence for tame representations of the Weil-group Ω_F of a local field F '	N.d.
B.86	Untitled workings, dated 22 and 23 January 1969	1969
B.87	Untitled working, dated 26 April 1980, with 'Supplement to my M.S. of 26 April'	1980
B.88-B.90	'Old' Contents of folder so inscribed divided into three for ease of reference: mathematical workings.	N.d.
B.91-B.93	Contents of much reused folder divided into three for ease of reference: mathematical workings	N.d.
B.94	'Some more general nonsense'	N.d.
B.95	'§ More abstract nonsense' Duplicated typescript paginated 99-115.	N.d.
B.96-B.101	Miscellaneous mathematical workings 6 folders.	N.d.
SECTION C	PUBLICATIONS, C.1-C.125	1950-2000, n.d.
	The Bibliog.no. ... references in the catalogue entries refer to Fröhlich's Bibliography presented at A.16.	
	The bulk of the material is offprints of published papers but there are also a few unpublished drafts, including work with C.T.C. Wall on Brauer groups, and a possible draft of a book on 'mathematical theory of ostensive and consequently of empirical predicates'.	
C.1	'The representation of a finite group as a group of automorphisms on a finite Abelian group', <i>Q. J. Math.</i> 2nd ser. vol. 1 (1950) 270–283. Bibliog. no. 1 Offprint.	1950
C.2	'On the class group of relatively Abelian fields', <i>Q. J. Math.</i> 2nd ser. vol. 3 (1952), 98–106. Bibliog. no. 2 Photocopied offprint.	1952
C.3	'On fields of class two', <i>Proc. Lond. Math. Soc.</i> 3rd ser. vol. 4 (1954), 235–256. Bibliog. no. 3 Offprint.	1954
C.4	'On the absolute class group of Abelian fields', <i>J. Lond. Math. Soc.</i> vol. 29 (1954), 211–217. Bibliog. no. 4 Offprint.	1954
C.5	'A note on the class field tower', <i>Q. J. Math.</i> 2nd ser. vol. 5 (1954), 141–144. Bibliog. no. 5	1954

- Offprint.
- C.6 'The generalization of a theorem of L. Rédei's', *Q. J. Math* 2nd ser. vol. 5 (1954), 130–140. Bibliog. no. 6
Offprint.
- C.7 'A remark on the class number of Abelian fields'. *J. Lond. Math. Soc.* vol. 29 (1954), 498. Bibliog. no. 7
Offprint.
- C.8 'On the absolute class group of Abelian fields (II)'. *J. Lond. Math. Soc.* vol. 30 (1955), 72–80. Bibliog. no. 8
Offprint.
- C.9 'Non Abelian laws of prime decomposition', *Proc. Int. Cong. Math., Amsterdam 1954*, vol. 2, pp. 20–21. Amsterdam: North-Holland, 1955. Bibliog. no. 9
Offprint (of abstract).
- C.10 (With J.C. Shepherdson) 'On the factorisation of polynomials in a finite number of steps', *Math. Zeitschr.* vol. 62 (1955), 331–334. Bibliog. no. 10
Offprint.
- C.11 (With J.C. Shepherdson) 'Effective procedures in field theory', *Phil. Trans. R. Soc. Lond.* vol. A248 (1956), 407–432. Bibliog. no. 11
Offprint.
- C.12 'Distributively generated near-rings. I. Ideal theory'. *Proc. Lond. Math. Soc.* 3rd ser. vol. 8 (1958), 76–94 and 'Distributively generated near-rings. II. Representation theory'. *Proc. Lond. Math. Soc.* 3rd ser. vol. 8 (1958), 95–108. Bibliog. nos. 12 and 13
Photocopied offprints.
- C.13 'The near ring generated by the inner automorphisms of a finite simple group', *J. Lond. Math. Soc.* vol. 33 (1958), 95–107. Bibliog. no. 14
Offprint.
- C.14 'On a method for the determination of class factors in number fields', *Mathematika* vol. 4 (1957), 113–121. Bibliog. no. 15
Offprint.
- C.15 'The restricted biquadratic residue symbol', *Proc. Lond. Math. Soc.* 3rd ser. vol. 9 (1959), 189–207. Bibliog. no. 16
Offprint.
- C.16 'The rational characterisation of certain sets of relatively Abelian extensions', *Phil. Trans. R. Soc. Lond.* vol. A251 (1959), 385–425. Bibliog. no. 17
Offprint.
- C.17 'The genus field and the genus group in finite number fields', *Mathematika* vol. 6 (1959), 40–45; and 'The genus field and the genus group in finite number fields. II', *Mathematika* vol. 6 (1959), 142–146. Bibliog. nos. 18 and 19

Offprints.

- C.18 'Discriminants of algebraic number fields', *Math. Zeitschr.* vol. 74 (1960), 1–28; and 'Ideals in an extension field as modules over the algebraic integers in a finite number field', *Math. Zeitschr.* vol. 74 (1960), 29–38. Bibliog. nos. 20 and 21
Offprints. 1960
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- C.20 'On groups over a d.g. near-ring (I): Sum constructs and free R -groups', *Q. J. Math.* 2nd ser. vol. 11 (1960), 193–210; and 'On groups over a d.g. near-ring (II): Categories and functors', *Q. J. Math.* 2nd ser. vol. 11 (1960), 211–228. Bibliog. nos. 23 and 24
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- C.36 (With J.V. Armitage) 'Class numbers and unit signatures', *Mathematika* vol. 14 (1967), 94–98. Bibliog. no. 43
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- C.41 'Hermitian and quadratic forms over rings with involution', *Q. J. Math. Oxf.* 2nd ser. vol 20 (1969), 297–317. Bibliog. no. 48
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- C.42 'On the classgroup of integral groupings of finite Abelian groups', *Mathematika* vol. 16 (1969), 143–152; and 'On the classgroup of integral group rings of finite Abelian groups. II', *Mathematika* vol. 19 (1972), 51–56. Bibliog. nos. 49 and 54
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- C.44 (With C.T.C. Wall) 'Equivariant Brauer groups in algebraic number theory', *Bull. Soc. math. Fr.* vol. 25 (1971), 91–96. Bibliog. no. 51
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- C.45A Photocopied manuscript
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- C.49 'The Picard group of noncommutative rings, in particular of orders', *Trans. Am. Math. Soc.* vol. 180 (1973), 1–45. Bibliog. no. 56

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- See also E.119.
- C.52 'Module invariants and root numbers for quaternion fields of degree $4l^r$ ', *Proc. Camb. Phil. Soc.* vol. 76 (1974), 393–399. Bibliog. no. 59
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- C.53 (With C.T.C. Wall) 'Graded monoidal categories', *Compos. Math.* vol. 28 (1974), 229–285. Bibliog. no. 60
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- See also E.109.
- C.54 'The Galois module structure of algebraic integer rings in fields with generalised quaternion group', *Bull. Soc. Math. Fr.* vol. 27 (1974), 81–86. Bibliog. no. 61
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- C.55 (With I. Reiner and S.V. Ullom) 'Class groups and Picard groups of orders', *Proc. Lond. Math. Soc.* 3rd ser. vol. 29 (1974), 405–434. Bibliog. no. 62
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- C.58 'Artin root numbers for quaternion characters', *Symp. Math.* vol. 15 (1975), 353–363. Bibliog. no. 65
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- C.59 'Resolvents and trace form', *Math. Proc. Camb. Phil. Soc.* vol. 78 (1975), 185–210. Bibliog. no. 66
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- C.60 'Module conductors and module resolvents', *Proc. Lond. Math. Soc.* 3rd ser. vol. 32 (1976), 279–321. Bibliog. no. 67
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- C.61 'A normal integral basis theorem', *J. Algebra* vol. 39 (1976), 131–137. Bibliog. no. 68
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- C.62 'Galois module structure and Artin L -functions'. In *Proc. Int. Congress of Mathematicians, Vancouver, 1974* (ed. R.D. James) vol. 1, pp. 351–356. London: Academic Press, 1975. Bibliog. no. 69
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See also E.32-E.36.
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- C.65 'Local Hermitian group modules'. In *Conference on Quadratic Forms 1976 (Queen's papers on pure and applied mathematics no. 46)* (ed. G. Orzech), pp. 493–514. Kingston, Ontario: Queen's University, 1977. Bibliog. no. 72
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- C.69 'Non-Abelian Jacobi sums'. In *Number theory and algebra* (ed. H. Zassenhaus), pp. 71–75. New York: Academic Press, 1977. Bibliog. no. 78
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- C.71 'On parity problems' (*Semin. Théorie des Nombres, Bordeaux (1978–79)* no. 21). Talence: ONRS, 1979. Bibliog. no. 80.
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- C.72 (With M.J. Taylor) 'The arithmetic theory of local Galois Gauss sums for tame characters', *Phil. Trans. R. Soc. Lond.* A298 (1980), 141–181. Bibliog. no. 81
Offprint.

See also E.93.
- C.73 'Galois module structure and root numbers for quaternion extensions of degree 2^n ', *J. Number Theory* vol. 12 (1980), 499–518. Bibliog. no. 82
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- C.74 'The Hermitian classgroup'. In *Integral representations and applications, Oberwolfach 1980 (Lecture notes in mathematics no. 882)* (ed. K.W. Roggenkamp), pp. 191–206. Berlin: Springer, 1981. Bibliog. no. 83
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- C.78 (With C.J. Bushnell) *Gauss sums and p-adic division algebras (Lecture notes in mathematics no. 987)*. Berlin: Springer, 1983. Bibliog. no. 87

These lectures were delivered at the University of Illinois in autumn 1981, when Fröhlich was G.A. Miller Visiting Professor there. See also D.7.
Bound volume.
- C.79 *Central Extensions, Galois Groups and Ideal Class Groups of Number Fields, Contemp. Math.* vol. 24 (1983). Bibliog. no. 88
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- C.80 'Class groups and Hermitian Modules', *Prog. Math.* vol. 48 (1984), 1–226. Bibliog. no. 89
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- C.81, C.82 *Gauss'sche Summen. Notes of lectures taken by Kleinert, Denninger, Everest.* 2 vols. Mathematisches Institut Köln, 1983. Bibliog. no. 90

Notes on lectures delivered in Köln 1982 (see D.11) and Cambridge 1983.
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- C.84 (With C.J. Bushnell) 'Non-Abelian congruence Gauss sums and p -adic simple algebras', *Proc. Lond. Math. Soc.* 3rd ser. vol. 50 (1985), 207–264. Bibliog. no. 93. Offprint. 1985
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- C.86 'Principal orders and embedding of local fields in algebras', *Proc. Lond. Math. Soc.* 3rd ser. vol. 54 (1987), 247–266. Bibliog. no. 95. Offprint. 1987
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- C.88 'Problems in representation theory arising from Galois modules (Arcata 1986)'. *Proc. Symp. Pure Maths* vol. 47 (1987), 81–85. Bibliog. no. 97. Offprint. 1987
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- See also D.24.
- C.90 'Tame representation in base change', *Contemp. Math.* vol. 86 (1989), 207–213. Bibliog. no. 99. 1989
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- C.91 'The papers on discriminants of cubic fields'. In *Collected papers of Hans Arnold Heilbronn* (ed. E.J. Kani and R.A. Smith), pp. 292–297. Toronto: Wiley-Interscience, 1986. Bibliog. no. 100. Proof; photocopied article. 1986

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C.93	Untitled draft beginning 'Let K be a number field L a finite Galois extension of K '. Not listed in Bibliog. 39pp typescript	ca 1988
C.94	' L -values at zero and multiplicative Galois module structure (also Galois Gauss sums and additive Galois module structure)', <i>J. reine angew. Math.</i> vol. 397 (1989), 42–99. Bibliog. no. 102 Offprint.	1989
C.95	'The genus class group I ', <i>Sémin. Théorie des Nombres, Bordeaux</i> vol. 4 (1992), 97–111. Bibliog. no. 103 Photocopied offprint.	1992
C.96, C.97	(With M.J. Taylor) <i>Algebraic number theory</i> . Cambridge University Press, 1991. Bibliog. no. 104	1991, 1995
C.96	Copy of book.	1991
C.97	Review	1995
C.98	'Units in real Abelian fields', <i>J. reine angew. Math.</i> vol. 429 (1992), 191–217. Bibliog. no. 105 'Omitted proofs' (retained in original folder); offprint.	1992
C.99-C.104	'Strict factorisability and shadows'. In <i>Algebra and Number Theory, Essen 1992</i> (ed. G. Frey and J. Ritter), pp. 1–25. Berlin: de Gruyter, 1994. Bibliog. no. 107	1994, 1997
C.99	39pp typescript draft	1994
C.100	'Corrected final' draft, 23pp typescript	1994
C.101	Photocopied manuscript and typescript pages in Fröhlich's hand beginning '2 The class of a principal factorisation'; typescript note '2 The class of a principal factorisation', with note from 'Jürgen [Ritter]' attached, 'Lieber Ali, ist das das Richtige?', 16 April 1997; photocopied manuscript pages.	1997
C.102, C.103	'II. Equivariant classgroups and Brauer groups' 61pp manuscript working, found with preceding material but appears to be earlier in date. This may be related to 'Generalisations of the Brauer group I ' (see C.45, C.45A). 2 folders. See also C.44, C.110, E.106-E.111.	N.d.
C.104	Manuscript workings 'These are computations in connection with the regulator defined by AF and factorizability [...]'	N.d.
C.105-C.108	'Galois modules and the functional equation'. Not listed in Bibliog.	ca 1995

C.105	Manuscript and photocopied manuscript sections	
C.106-C.108	Typescript drafts, three (slightly) different versions 3 folders.	
C.109	'Some remarks on wild extensions of number fields', <i>J. reine angew. Math.</i> vol. 495 (1998), 29–33. Bibliog. no. 108 8pp photocopied manuscript draft; offprint.	1998
C.110	(With C.T.C. Wall) 'Equivariant Brauer groups', <i>Contemp. Math.</i> vol. 272 (2000), 57–71. Bibliog. no. 109 9pp typescript; offprint. See also C.44, C.45, C.102, C.103, E.106-E.111.	2000
C.111	'On the unit group normal number fields' 4pp typescript.	N.d.
C.112-C.116	Incomplete draft of ?book on 'mathematical theory of ostensive and consequently of empirical predicates' 5 folders.	N.d.
C.117-C.119	Draft beginning 'Chapter 2 The cohomology theory $Ell^*(X)$ ' 3 folders.	N.d.
C.120	'Ali Fröhlich's review of Hassé Collected works' 5pp typescript so headed.	N.d.
C.121, C.122	Draft on groupoid spaces 43pp duplicated typescript. 2 folders.	N.d.
C.123	Review of <i>Les conjectures de Stark sur les fonctions L d'Artin en $s=0$: notes d'un cours à Orsay [de] John Tate</i> by D. Bernardi and N. Schappacher, Boston, 1984	1984
C.124	Referee's 'Report on "Units in Real Abelian Fields", by A. Fröhlich' 7pp typescript; comments on Fröhlich's report.	1991
C.125	Refereeing	1975, 1983, n.d.
SECTION D	VISITS, CONFERENCES AND LECTURES, D.1-D.43	1956-1998, n.d.
D.1	'A reciprocity relation between pairs of quadratic forms', lecture given in Vienna, Austria, September 1956 6pp typescript resume.	1956
D.2	Visit to California, USA Fröhlich was visiting as Senior Research Fellow in Mathematics, California Institute of Technology, Pasadena, January-June 1962. See also E.83.	1961, 1962

- Invitation; UCLA weekly calendar for 18-25 March 1962 (Fröhlich is listed as leading a Mathematics Colloquium on 'Discriminants of algebraic number fields', 22 March); California Institute of Technology weekly calendar for 30 April-6 May (Fröhlich is listed as lecturing on 'Inverse problem of Galois theory', 1 May).
- D.3 Visit to University of Arizona, January-June 1971 1971
Photocopy of newspaper cutting referring to Fröhlich visiting as National Science Foundation Fellow.
- D.4 Research Symposium on Algebraic Number Theory, UK, 2-12 1975
September 1975
List of participants receiving Science Research Council support.
- D.5 Visit to Israel, September-December 1978 1978
Fröhlich was Royal Society-Israel Academy Visiting Research Professor.
Letter from Royal Society *re* financial arrangements.
- D.6 Retirement Seminar, King's College London, 12 June 1981 1981
Programme.
- D.7 Visit to University of Illinois at Urbana-Champaign, 1981-1982 1981
Fröhlich was visiting as a Miller Professor in the Department of Mathematics. For the academic year 1981-1982 the University hosted a year-long programme in Algebraic Number Theory and Algebra, with a number of other eminent visiting scholars.
Announcement; programme for lectures on Algebraic Number Theory and Algebra (Fröhlich is listed as lecturing on 'Galois module structure and the embedding problem'); invitation to lecture at University of Chicago in February 1982 (invitation annotated by Fröhlich 'Normal bases - History and recent progress').
See C.78 for published lectures.
- D.8 Colloquium marking the Centenary of the birth of Emmy 1982
Noether (1882-1935), University of Erlangen-Nürnberg, Germany, 27 February 1982.
Fröhlich lectured on 'Emmy Noethers Beitrag zur Zahlentheorie'.
Programme, invitation and correspondence arising.
- D.9 American Mathematical Society 793rd Meeting, Bryn Mawr 1981, 1982
College, Pennsylvania, USA, 16-17 March 1982

- Fröhlich lectured on 'Rings of algebraic integers as Galois modules'.
- Invitation, programme, photocopied manuscript lecture notes.
- D.10 Colloquium on Number Theory, Luminy, France, 28-June-3 July 1982 1981
- Invitation from G. Henniart, annotated 'Value distributions of root numbers and free Galois modules'.
- D.11 Visit to Germany, 6 June-30 July and 24 October-4 December 1982 1982
- Fröhlich was based at the University of Köln.
- Notice of three lectures at Köln, 'Gauß'sche Summen und Galois Modul Struktur', 'Gauß'sche Summen und lokale Langlands-Theorie' and 'The arithmetic theory of local Gauß sums for tame characters'; programme of Heidelberger Zahlentheorie Kolloquium, University of Heidelberg, 9 July (Fröhlich is lecturing on 'Gauß'sche Summen für einfache Algebren'); notice of lecture by Fröhlich on 'Gauß'sche Summen', University of Augsburg, 12 November.
- The Köln lectures were published as *Gauss'sche Summen. Notes of lectures taken by Kleinert, Denninger, Everest*. 2 vols. Mathematische Institut Köln, 1983 (see C.81,C.82).
- D.12 Shorter correspondence *re* visits and conferences 1983 1982-1983
- Conference at Oberwolfach, 10-16 April 1983; invitation to visit the University of Bordeaux I, in the year 1983-1984; letter *re* Conference on Quadratic forms and Hermitian K-theory, McMaster University, Hamilton, Ontario, Canada.
- D.13 Conference on Orders and their Applications, Mathematisches Forschungsinstitut, Oberwolfach, Germany, 3-9 June 1984 1984
- Programme.
- Fröhlich lectured on 'Principal orders and arithmetic'.
- D.14 Conference on Algebraische Zahlentheorie, Mathematisches Forschungsinstitut, Oberwolfach, Germany, 5-11 August 1984 1984
- Programme, abstracts.
- Fröhlich lectured 'On Serre's formula for the trace form'.
- D.15 Visit to The Netherlands, December 1984 1984
- Letter to J. Brinkhuis *re* schedule; programme of meeting at the Erasmus University, Rotterdam, 10 December (Fröhlich is listed as lecturing on 'Gauss sums for tame representation of local Weil-Deligne groups and of local principal orders').

- D.16 American Mathematical Society 818th Meeting, University of Arizona, Tucson, USA, 12-13 April 1985 1985
Annotated programme.
- D.17 Mathematics Colloquium, University of Augsburg, Germany, 14 June 1985 1985
Programme.
Fröhlich lectured on 'Multiplikative und additive Galois-Modul-Struktur'.
- D.18 Pure Mathematics Workshop on Galois Modules and Zeta Functions', University of Exeter, 2-6 September 1985 1985
Letter from R.W.K. Odoni *re* arrangements; list of participants; programme.
Fröhlich lectured on 'Wild Galois module structure and Gauss sums'.
- D.19 Number Theory Seminar, King's College London, 16 October 1985 1985
Programme.
Fröhlich lectured on 'Galois module structure of units'.
- D.20 Conference on Representation Theory and Number Theory in connection with the local Langlands Conjecture', University of Augsburg, Germany, 8-14 December 1985 1985
Programme and arrangements.
Fröhlich lectured on 'Tame Deligne representations of Weil groups, principal orders and base change'.
- D.21 Colloquium to mark the 65th birthday of Herbert Benz, University of Köln, 25 January 1986 1986
Programme.
Fröhlich lectured on 'Hauptordnungen, Gauß'sche Summen und Langlands'sche Vermutung'.
- D.22 Meeting on Arithmetic Galois module, University of Manchester Institute of Science and Technology, 20-21 June 1986 1986
Programme.
Fröhlich gave lectures on 'Galois module structure I' and 'Galois module structure II'.
- D.23 Shorter correspondence *re* visits and conferences 1986-1987 1985

- American Mathematical Society Summer Research Institute on Representation Theory of Finite Groups and Related Topics, University of California at Berkeley, 6-25 July 1986; visit to Mathematical Sciences Research Institute, Berkeley, California, 1986-1987.
- D.24 Seminar on Number Theory, University of Bordeaux I, June 1987 1987
- Invitation; 'Calculations and corrections in connection with 1987 Bordeaux paper'; copy of lecture as published.
- Fröhlich lectured on '*L*-functions at $S=0$ and Galois modules'. Published in *Semin. Théorie des Nombres, Bordeaux (1986-87)*, no. 32 (see also C.89).
- D.25 Visit to China, autumn 1987 1987
- Fröhlich was Visiting Professor at the University of Beijing.
- Letter *re* arrangements.
- D.26 Shorter correspondence *re* visits and conferences 1988 1987, 1988
- Meeting on arithmetic Galois modules organised by University of Manchester Institute of Science and Technology, 17-20 April 1988; NATO Advanced Studies Institute in Number Theory and Applications, Banff, Canada, 27 April-5 May 1988.
- D.27, D.28 Visits to Germany, summer 1988 1987, 1988
- D.27 Conferences at Mathematisches Forschungsinstitut, Oberwolfach 1987, 1988
- Orders and their Applications, 29 May-4 June (Fröhlich lectured on 'Factorvariability of group modules') and Algebraische Zahlentheorie, 7-13 August (Fröhlich lectured on 'Multiplicative Galois module structure').
- Invitations, programmes.
- D.28 Meeting on Galois theory of local and global number fields, Göttingen, 6-10 June (Fröhlich gave two lectures on 'Multiplicative Galois module structure and L -values at $s=0$ ') 1988
- Handbook of abstracts; photocopied manuscript notes.
- D.29 London Mathematical Society meeting on Arithmetic Galois Modules, University of Manchester Institute of Science and Technology, 23-24 February 1989 1989
- Programme, report by Fröhlich for the London Mathematical Society.
- Fröhlich lectured on 'Genus Class-groups Factorizability and Galois module structure'.

- D.30 London Mathematical Society symposium on L-functions and Arithmetic, University of Durham, 30 June-11 July 1989 1989
- List of participants; annotated programme.
- Fröhlich lectured on the theme of L-functions and Galois modules.
- D.31 Shorter correspondence *re* visits and conferences 1989 1989
- Invitation to visit and lecture at University of Iowa, USA, between August 1989 and May 1990, annotated by Fröhlich 'March, April [...]'; letter from London Mathematical Society *re* financial support for meeting on Arithmetic Galois Modules, Cambridge, September.
- D.32 Colloquium at University of Augsburg, Germany, 24-25 November 1989 1989
- Invitation; programme.
- Fröhlich lectured on 'Galoismodulstruktur – eine zahlentheoretische Anwendung algebraischer und analytischer Methoden'.
- D.33 Visit to McMaster University, Hamilton, Ontario, Canada, March 1990 1989, 1990
- Invitation; list of Mathematics and Statistics Department activities for 19-23 March 1990 (Fröhlich is listed as lecturing on 'Units in Abelian fields' and giving a colloquium on 'Arithmetic Galois modules').
- D.34 Visit to Eidgenössische Technische Hochschule, Zürich, Switzerland, June 1990 1989, 1990
- Invitation and letter *re* arrangements; letter *re* visit to University of Köln, June 1989.
- D.35 Colloquium on Structures Galoisiennes Arithmetiques, University of Bordeaux I, Talence, France, 24-28 September 1990. 1990
- Outline of subjects to be covered (in French).
- D.36 Galois Module Workshop, Isaac Newton Institute, University of Cambridge, 27 April 1993 1993
- Programme.
- Fröhlich lectured on 'Shadows and L-functions'.
- D.37 Conference on Integral Galois Structures, University of Augsburg, Germany, 18-23 July 1993 1993
- Bound conference report.
- Fröhlich lectured on 'Strict factorisability in additive structure'.

- D.38 Conference on Orders in Arithmetic and Geometry, Mathematisches Forschungsinstitut, Oberwolfach, Germany, 16-22 April 1995 1995
Conference handbook.
Fröhlich lectured on 'Galois Gauss sums and factorization'.
- D.39 Conference on Orders in Arithmetic and Geometry, Mathematisches Forschungsinstitut, Oberwolfach, Germany, 17-23 January 1999 1998
Invitation and booking form; 11pp photocopied manuscript lecture notes.
Fröhlich lectured 'On wild extensions of number fields'.
- D.40 Programme for unidentified two week meeting N.d.
Fröhlich is listed as lecturing on 'Hermitian structure of algebraic integers'.
- D.41 Contents of folder inscribed 'Lecture'. N.d.
Transparencies for lecture ?on number theory.
- D.42 Manuscript notes labelled 'Talks. Manitropic: factorizibility (but also topics from the Springer and Birkhauser book)'. N.d.
- D.43 Manuscript draft of lecture beginning 'A few years ago I discussed some new invariants of a discriminantal type – I have called them module conductors'. N.d.

SECTION E CORRESPONDENCE, E.1-E.125 1950-2000

This section is Fröhlich's surviving mathematical correspondence. A number of the major sequences of correspondence with individuals were kept together with treasury tags or staples but there is evidence that some letters were later removed by Fröhlich, and while many were then found loose or in shorter sequences, a number were not found.

The section is arranged in an alphabetical sequence. It is international in scope, with many correspondents from North America, France and Germany. Many of the letters focus on progress of research and include discussions of problems with mathematical workings, sometimes as separate documents, and drafts of papers. Although it spans 1950-2000, the bulk dates from the 1970s-1990s.

- E.1 Adams, J.F. 1984
Comments on draft of appendix I to Fröhlich's 'Orthogonal representations of Galois groups, Stiefel-Whitney classes and Hasse-Witt invariants', *J. reine angew. Math.* vol. 360 (1985).

- See C.85.
- E.2 Bayer, E. 1979
Bayer was based at the University of Geneva.
Includes photocopied manuscript draft 'Isometric structures with an irreducible characteristic polynomial' by Bayer.
- E.3 Berge, A.-M. 1976-1980
Berge was based at the U.E.R. de Mathématiques et d'Informatique, University of Bordeaux I, Talence, France.
Includes manuscript draft of 'Local Galois module structure in the wild case' by Berge.
- E.4-E.7 Brinkhuis, J. 1984-2000
Brinkhuis was based at the Erasmus University of Rotterdam, The Netherlands.
Chiefly draft papers sent to Fröhlich for comment.
- E.4 Includes typescript draft 'Relative Galois module structure for quartic fields' 1984, 1988
- E.5 Includes typescript draft 'On a comparison of Gauss sums with products of Lagrange resolvents' ca 1989
- E.6 Includes photocopied manuscript draft 'Normal integral bases and the Spiegelungssatz of Scholz' 1990
- E.7 Includes fragments of letters 2000, n.d.
- E.8 Burns, D. 1992, 1993, n.d.
Typescript drafts sent to Fröhlich: 'Adams operations and integral Galois representations', 'On twisted Galois-Gauss sums and canonical factorizations', 'On arithmetically realisable classes', 'A remark concerning arithmetical associated orders'.
- E.9-E.14 Bushnell, C.J. 1980s-1996, n.d.
Bushnell was a postgraduate student of Fröhlich's at King's College London 1968-1971 (Ph.D. 'Representations of 23-Graded Groups', see F.12). He was appointed Temporary Lecturer at King's in 1971 and after a period at the University of Illinois 1972-1974 returned to King's in 1974, being appointed Professor of Pure Mathematics in 1990.
- E.9 CVs, research statements etc. 1980s, 1990s
- E.10 Correspondence 1984, 1985, n.d.
Chiefly *re* career, progress of research.

E.11	'Hereditary orders, Gauss sums and supercuspidal representations of GL_N [...] To Albrecht Fröhlich on his seventieth birthday', 54pp typescript.	1986
E.12	Correspondence Includes photocopied manuscript draft 'Conductors of primitive Galois representations' by Bushnell sent to Fröhlich for comment.	1987, 1988
E.13	Letter on work in progress, with typescript drafts of 'Local tame lifting for $GL(N)$ ' with G. Henniart, 'Smooth representations of p -adic groups: the role of compact open subgroups' and 'Smooth representations of reductive p -adic groups', with P.C. Kutzko.	1995
E.14	Citation for Bushnell; undated letter from Fröhlich	1996, n.d.
E.15	B.	1972-1990
E.16	Cassels, J.W.S.	1966-1975
E.17	Cassou-Noguès, P. Cassou-Noguès was based at U.E.R. de Mathématiques et d'Informatique, University of Bordeaux I, Talence, France. Chiefly on work in progress, with mathematical workings. Although the letters are dated with the day and month, they do not bear the year so cannot be placed in chronological order.	N.d.
E.17A	Chase, S.U. 62pp manuscript on the local theory of resolvent and related invariants.	1977
E.18	Chinburg, T.C. Chinburg was Assistant Professor, then full Professor of Mathematics at the University of Pennsylvania. Career, work in progress.	1985-1989, n.d.
E.19	Cougnard, J. Cougnard was based at the University of Franche-Comté, Besançon, France. Includes correspondence 1981-1982 <i>re</i> Cougnard's 'Bourbaki talk'. Cougnard's letters are in French.	1978-1982, n.d.
E.20	C.	1983, n.d.
E.21	D.-E.	1963-1988

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|-----------|---|---------------------|
| E.22 | Erez, B. | 1990-1993,
1999 |
| | Includes Erez's 'Abstract of past research and research plans for 1990' and outlines of planned book on 'Galois modules in arithmetic', with Fröhlich's responses. | |
| E.23 | F. | 1967-2000 |
| E.24 | Galovich, S.P. | 1972-1973 |
| | At the time of writing Galovich was Professor of Mathematics at Carleton College, Northfield, Minnesota. | |
| | Includes correspondence <i>re</i> Galovich's work on the projective class group. | |
| E.25 | Garbanati, D. | 1975-1976 |
| E.26 | Geyer, W.-D. | 1980 |
| | Collected works of H. Hasse. | |
| | Includes 5pp draft typescript of introduction. | |
| E.27 | Gras, G. | 1973-1974 |
| | Progress of research. | |
| | Gras's letters are in French. | |
| E.28 | Green, J.A. | 1964, 1968,
1987 |
| | Correspondence 1964 <i>re</i> problem from number theory. | |
| E.29 | G. | 1968-1994 |
| E.30 | Hall, P. | 1958-1965 |
| | Hall was Sadlerian Professor of Pure Mathematics at Cambridge. | |
| E.31 | Hasse, H. | 1965, 1974 |
| | Hasse was Professor of Mathematics at the University of Hamburg. | |
| | Incoming letters only. In German. Correspondence 1965 is chiefly <i>re</i> arrangements for visit to London. | |
| E.32-E.36 | Heilbronn, H.A. | 1950-1976 |
| | Heilbronn had fled Germany in 1933. He was appointed Reader in Mathematics at the University of Bristol in 1946 and Professor and Head of the Department 1949. He moved to Canada in 1964 where he was appointed to a chair of mathematics at Toronto University. | |

- Heilbronn was Fröhlich's Ph.D. supervisor at Bristol. Fröhlich and J.W.S. Cassels wrote the Royal Society Biographical Memoir of Heilbronn (see C.63).
- E.32 Correspondence and papers 1950-1955
Research in progress, social news (all incoming).
Correspondence of August 1955 includes manuscript workings.
- E.33 Correspondence *re* research in progress, including criticism of paper by Fröhlich to be submitted to the London Mathematical Society. 1957, 1959
- E.34 Correspondence *re* research in progress, including Abelian fields and Artin L-functions. 1970
- E.35 Correspondence *re* research in progress, including Artin L-functions, and possible visit of Heilbronn to London as a Visiting Fellow. 1972-1974
- E.36 Correspondence and papers *re* Biographical Memoir of Heilbronn. Including drafts of sections of the Memoir. 1975-1976
Includes contributions from C.A. Rogers, P. Du Val and R. Rado, H.S.M. Coxeter and T. Callahan.
- E.37 Holland, D. 1991-1993
Correspondence *re* move to McMaster University, Canada; draft papers on Chinburg's Third Invariant.
- E.38 Hsia, J.S. 1970
Hsia was Professor of Mathematics at Ohio State University, USA.
Correspondence *re* problems of $\text{Ker } \Lambda$ and $\text{Ker } \Sigma$.
- E.39 H.-J. 1966-1989
- E.40 Kani, E. 1983-1988
Kani was based at Harvard University.
Correspondence *re* preparation of volume of H.A. Heilbronn's collected works.
- E.41 Kawamoto, F. 1983, 1984
Kawamoto was a postgraduate student based at Gakushuin University, Japan.
Includes 'On normal integral bases of local fields' by Kawamoto sent to Fröhlich for comment.
- E.42 Kneser, M. 1964-1985

Kneser was based at the Georg-August University, Göttingen, Germany.

Later correspondence (chiefly incoming) in German.

Includes correspondence *re* possible visit to Göttingen as Guest Professor (1982-1983), and progress of research.

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| E.43 | Knus, M.A. | 1970-1985 |
| | Knus was based at the Eidgenössische Technische Hochschule, Zürich, Switzerland. | |
| | Progress of research. | |
| E.44 | Koch, H. | 1965-1989,
n.d. |
| | Koch was based at the Deutsche Akademie der Wissenschaften zu Berlin (later the Akademie der Wissenschaften der DDR), East Berlin, East Germany. | |
| | Progress of research, visits. | |
| E.45 | Kuroda, S.-N. | 1954-1974 |
| | Progress of research, visit to London 1968-1969. | |
| E.46 | K. | 1967-1996 |
| E.47 | Lecouturier, P. | 1965, 1966 |
| | Lecouturier was a Belgian mathematician. | |
| | Research on epimorphism. | |
| E.48 | L. | 1966-1988 |
| E.49 | McCulloh, L.R. | 1978-1985,
n.d. |
| | McCulloh was Professor of Mathematics at University of Illinois at Urbana-Champaign. | |
| | Chiefly <i>re</i> progress of research. | |
| E.50 | Macdonald, I.G. | 1986 |
| | Correspondence <i>re</i> working 'Let $\sigma \in \text{Gal}(\mathbb{Q}^{\text{cycl}}/\mathbb{Q})$ '. | |
| E.51 | McEvet, A.W. | 1969, 1970 |
| | McEvet was a postgraduate student of Fröhlich's at King's College London in the 1960s (Ph.D. 'Hermitian Forms over Algebras', see F.8). | |
| | Correspondence <i>re</i> working 'Let Γ be an infinite group of order n and let K be a field whose characteristic does not divide 2 or | |

- n' (1969) and paper 'On the splitting by subalgebras of algebras with involution traces' (1970).
- E.52-E.54 Martinet, J. 1970-1992
- Martinet was based at the U.E.R. de Mathématiques et d'Informatique, University of Bordeaux I, Talence, France.
- E.52 Curriculum vitae 1992
- E.53 Correspondence *re* progress of research including paper on $W(x)=1$, visits of Martinet and J. Queyrut to London and Fröhlich to Bordeaux 1970-1974
- E.54 Correspondence *re* progress of research including the problem of notation for root numbers and Gauss sums, and examining the thesis of P. Cassou-Noguès (see F.25) 1975-1984
- E.55 Milnor, J. 1971
- Correspondence and papers *re* $W(D)$, including manuscript workings by Fröhlich.
- E.56 Narkiewicz, W. 1964-1979
- Narkiewicz was based at the University of Wroclaw, Poland.
- Includes questions on normal fields, with Fröhlich's answers.
- E.57 Nelson, A.M. 1981, 1984
- Nelson was a postgraduate student of Fröhlich's at King's College London in the late 1970s (Ph.D. 'Monomial Representations and Galois Module Structure', see F.18). He then moved to Macquarie University, Australia.
- E.58 Ojanguren, M. 1972
- Ojanguren was based at the Battelle Advanced Studies Centre, Geneva, Switzerland.
- Correspondence *re* work on Azumaya algebras.
- E.59 O. 1979-1993
- E.60 Perlis, R. 1983-1984
- Perlis was Professor of Mathematics at the Louisiana State University, Baton Rouge, USA.
- Includes a manuscript working by Perlis on the zeta function.
- E.61 P., Q. 1972-1980
- E.62 Rédei, L. 1954-1960
- Rédei was based at the Bolyai Mathematical Institute, Szeged, Hungary.

	Progress of research.	
	Incoming correspondence only, in German.	
E.63, E.64	Reiner, I.	1971-1983
	Reiner was based at the University of Illinois at Urbana-Champaign.	
	Includes joint correspondence to Reiner and S.V. Ullom (see also E.99-E.104). Reiner, Ullom and Fröhlich co-authored 'Class groups and Picard groups of orders', <i>Proc. Lond. Math. Soc.</i> 3rd ser. vol. 29 (1974) (see C.55).	
E.63	Correspondence and papers chiefly <i>re</i> work in progress on Picent (A) \rightarrow (C) and Picard groups, including comments on drafts.	1971-1972
E.64	Correspondence	1979, 1981, 1983
E.65, E.66	Ritter, J.	1980-1994
	For most of the period covered by the correspondence Ritter was based at the University of Augsburg, Germany.	
	Most of the correspondence is in German.	
E.65	Correspondence and papers, including manuscript and photocopied manuscript workings by Fröhlich, and text of talk by Ritter on 'On the integrality of group representations' by Ritter, referring to Fröhlich's work on Galois module structure	1980-1990
E.66	Correspondence on progress of research	1991-1994
E.67	Rocquette, P.	1975-1992
	Rocquette was Professor of Mathematics at the University of Heidelberg, Germany.	
	Includes correspondence <i>re</i> progress of research and organisation of the Oberwolfach meetings for 1982 and 1986.	
	Most of the correspondence is in German.	
E.68	Rosenberg, A.	1971
	Correspondence <i>re</i> research problem.	
E.69	R.	1965-1996
E.70	Schertz, R.	1978-1981
	Schertz was a mathematician based in Köln, Germany.	
	Most of the correspondence is in German.	
E.71-E.77	Serre, J.-P.	1960-1986

Serre, one of the leading mathematicians of the twentieth century (winning the Fields Medal at the age of 28), was Professor of Algebra and Geometry at the Collège de France, Paris.

Much of the incoming correspondence is in French.

E.71	Correspondence, including invitation to Serre to participate in London Mathematical Society 1965 summer school on algebraic number theory, and correspondence <i>re</i> areas to be covered	1960-1965
E.72	Correspondence <i>re</i> work in progress, including Serre's comments on article by Fröhlich and J.V. Armitage, 'Class numbers and unit signatures', <i>Mathematika</i> vol. 14 (1967) (see C.36)	1966-1971
E.73	Correspondence including <i>re</i> 'problem of the root number and normal integral basis of a field N with quaternion Galois group over Q', and proof of $w(x) = +1$	1972
E.74	Correspondence <i>re</i> work in progress including Serre's comments on draft of Artin root numbers, conductors and representations for generalised quaternion groups', <i>Proc. Lond. Math. Soc.</i> vol. 28 (1974) (see C.50), and Galois modules	1973-1974
E.75	Correspondence and papers <i>re</i> work in progress, attendance at meetings, visit to London etc. Includes photocopied manuscript workings by Serre, 'Tate or "Stark" (1978)' and 'La formule de Fröhlich'	1975-1978
E.76	Correspondence <i>re</i> work in progress, including Serre's comments on chapters 1-3 of Fröhlich's draft of 'Galois module structure of algebraic integers' (see C.77)	1979-1981
E.77	Correspondence <i>re</i> work in progress	1982-1986
E.78	Snaith, V. Snaith was based at the University of Western Ontario, London, Canada. Includes correspondence <i>re</i> differences in approaches, (with Snaith's manuscript 'Comments on "The equivariant SW_2 ...representation" ') and invitation to visit the University of Western Ontario, 1986.	1984-1986
E.79	Strooker, J.R. Strooker was based at the University of Utrecht.	1967-1971
E.80	S.	1966-1980, n.d.
E.81	Tate, J.T. Tate was Professor of Mathematics at Harvard University.	1964-1976

	Chiefly <i>re</i> arrangements for visits, including London Mathematical Society 1965 summer school on algebraic number theory.	
E.82-E.90	Taussky-Todd, O. Olga Taussky fled the Nazis in 1934 and came to the UK. After the war she and her husband John Todd, also a mathematician, moved to the USA. In 1957 they both joined the California Institute of Technology, Pasadena. She was made Professor in 1971. Taussky-Todd was Fröhlich's external examiner for his Ph.D. Fröhlich was writing the obituary of Taussky-Todd for the London Mathematical Society.	1957-1987, n.d.
E.82	Correspondence <i>re</i> quadratic subfields of fields with quaternions Galois group and other work in progress, and visits Fröhlich's planned visit in 1958 was cancelled as he was unable to get an American visa.	1957-1960
E.83	Correspondence <i>re</i> visit of Fröhlich to the California Institute of Technology as Senior Research Fellow January-June 1962, work in progress on ideal matrices and algebraic number theory See also D.2.	1961-1965
E.84	Correspondence <i>re</i> work in progress, planned visit to California Institute of Technology 1968	1966-1971
E.85	Correspondence <i>re</i> work in progress, including symmetry and group rings, possible visits	1972-1973
E.86	Correspondence <i>re</i> work in progress, visits and conference attendance, including lecture by Taussky-Todd at King's College on 'Some facts concerning integral matrices', December 1974	1974-1975
E.87	Correspondence chiefly <i>re</i> visits, news of colleagues, research plans	1976-1978
E.88	Correspondence <i>re</i> work on number theory and other work in progress, visits, news of colleagues	1979-1981
E.89	Correspondence and papers Includes photocopied manuscript note beginning, 'There is of course a large body of theory on orders in algebras over number fields and over local fields', undated.	1984, 1987, n.d.
E.90	Letter <i>re</i> obituary of Taussky-Todd for London Mathematical Society, copy of obituary in <i>Notices of the American Mathematical Society</i> , August 1996, manuscript notes by Fröhlich	1996

E.91-E.97	Taylor, M.J.	1977-2000
	Taylor was a postgraduate student of Fröhlich's at King's College London 1973-1976 (Ph.D. 'Galois Module Structure of the Rings of Integers of l -extension', see F.17). He went on to posts at Oxford, Queen Mary College London, and Cambridge, before being appointed Professor of Pure Mathematics at UMIST.	
E.91	Curriculum vitae	ca 1997
E.92	Correspondence <i>re</i> work in progress, including preparation of papers, news of colleagues	1977-1979
E.93, E.94	Correspondence <i>re</i> joint paper 'The arithmetic theory of local Galois Gauss sums for tame characters', <i>Phil. Trans. R. Soc. Lond.</i> A298 (1980) (see C.72), Taylor's proof of Fröhlich's conjecture $U=t(w)$, news of colleagues, etc. 2 folders.	1980
E.95	Correspondence and papers	1984, 1986, n.d.
	Includes photocopied manuscript 'Comments on "Local root numbers etc"' by Fröhlich, annotated 'Martin' and manuscript working beginning 'For simplicity take G of order lq (The method extends to $l'q$ without difficulty)' annotated 'File under Taylor'.	
E.96, E.97	Typescript preprints by Martin sent to Fröhlich for information: 'C-constants and Arakelov Euler characteristics', 'Epsilon constants and equivariant Arakelov Euler characteristics' 2 folders.	2000
E.98	T.	1974-1992
E.99-E.104	Ullom, S.V.	1967-1988
	After a period at the Institute for Advanced Study, Princeton, New Jersey, USA, Ullom moved to the University of Illinois at Urbana-Champaign.	
	For joint correspondence with I. Reiner see E.63.	
E.99	Correspondence <i>re</i> work in progress on classgroups, and Ullom's lectures at King's College London, spring 1969.	1967-1971
E.100	Correspondence and papers, including Ullom's demonstration of 'theorem for G a p -group, not necessarily abelian, of order p^{n+1} , $n \geq 0$ ', and correspondence <i>re</i> Reiner, Ullom and Fröhlich, 'Class groups and Picard groups of orders', <i>Proc. Lond. Math. Soc.</i> 3rd ser. vol. 29 (1974) (see C.55), and other work in progress	1972-1974
E.101	Correspondence and papers, including Ullom's grant application (unsuccessful) to spend sabbatical year 1976-1977 at King's College	1975-1976

- Ullom did come to London, supported by the University of Illinois.
- E.102 Correspondence arising from Ullom's sabbatical, work in progress on Bernoulli numbers and tame extensions, news of colleagues, visit to London 1979, etc. 1977-1979
- E.103 Correspondence *re* work in progress including Gauss sums 1980-1981
- E.104 Correspondence, including work of Ullom's student S.B. Watt (see F.23), work on Galois module structure 1982-1988
- E.105 V. 1980-1988
- E.106-E.111 Wall, C.T.C. 1968-2000, n.d.
- Wall was Professor of Pure Mathematics at the University of Liverpool. He co-authored a number of papers with Fröhlich.
- The correspondence includes many mathematical workings by both parties.
- E.106 Correspondence, chiefly *re* Brauer groups, and exchange of drafts and offprints 1968
- Wall and Fröhlich collaborated on a paper 'Equivariant Brauer groups in algebraic number theory', *Bull. Soc. math. Fr.* vol. 25 (1971) (see C.44).
- E.107 Correspondence, chiefly *re* Brauer groups and Γ -graded category, and joint paper delivered on equivariant K-theory, delivered at conference in Hull, published as 'Foundations of equivariant algebraic K-theory'. In *Proceedings of Hull Conference* (ed. R.M.F. Moss and C.B. Thomas). Berlin: Springer, 1969. (See C.40) 1969
- Includes 'Construction of some basic categories' by Wall, 8pp manuscript.
- E.108 Correspondence, including progress on joint paper on Brauer groups 1970-1971
- Wall and Fröhlich continued their work on Brauer groups, co-authoring 'Equivariant Brauer groups in algebraic number theory', *Bull. Soc. math. Fr.* vol. 25 (1971), see C.44. They also appear to have been preparing another major paper on the subject (see C.45, C.45A, C.102, C.103). This was never published.
- A joint paper 'Equivariant Brauer groups' was published in *Contemp. Math.* vol. 272 (2000), see C.110.
- E.109 Correspondence including work in progress on joint paper with Wall, 'Graded monoidal categories', *Compos. Math.* vol. 28 (1974) (see C.53) 1972-1973

In his letter of 8 December 1972 Fröhlich had written, 'I feel rather downhearted about the paper after your last letter and I wonder if it will ever be completed'.

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| E.110 | Correspondence and papers <i>re</i> work in progress, including classgroups of 2-cyclotomic fields and Swan modules $\delta(r)$ for π quaternion of order 2^n | 1974 |
| | Also includes typescript draft of 'Norms of units in group rings (Corrigendum)' by Wall. | |
| E.111 | Correspondence, including work on equivariant Brauer groups | 1976-1983,
2000, n.d. |
| | Also includes undated letters. | |
| E.112 | Walter, C.D. | 1975-1979 |
| | Walter was based at Cambridge before taking up a post at University College Dublin, Ireland. Fröhlich was an examiner of Walter's Ph.D. thesis. | |
| E.113 | Wehrfritz, B.A.F. | 1972-1981 |
| | Wehrfritz was based at Queen Mary College London. | |
| | Correspondence <i>re</i> problems in field theory. | |
| E.114 | Weiss, A | 1991 |
| | Weiss was based at the University of Alberta, Edmonton, Canada. | |
| | Correspondence <i>re</i> Galois stable lattices. | |
| E.115, E.116 | Wicke, G. | 1967-1976,
n.d. |
| | Wicke held a tutorial studentship in the King's College Mathematics Department 1962-1963. On return to Germany he took up a post at the Free University of Berlin. Fröhlich was external examiner for his Ph.D. thesis in 1975. | |
| E.115 | Correspondence, chiefly <i>re</i> career | 1967-1976 |
| E.116 | Photocopied manuscript draft 'Über allgemeine Resolventen', annotated 'File under Wicke' | N.d. |
| E.117 | Wielandt, H. | 1959 |
| | Includes correspondence <i>re</i> Fröhlich's work on near-rings. | |
| E.118-E.121 | Wilson, S.M.J. | 1973-ca 1994 |
| | Wilson was a postgraduate student of Fröhlich's at King's College in the late 1960s-early 1970s (Ph.D. 'On the K-theory of Twisted Group Rings' awarded 1972). He was appointed Research Assistant at King's in 1971 and Temporary Lecturer in 1972, before appointment in 1973 as Lecturer in Pure Mathematics at the University of Durham. | |

E.118	Curriculum vitae	ca 1994
E.119	Correspondence, including <i>re</i> joint paper with M. Keating, 'The classgroup of Quaternion and Dihedral 2-groups', <i>Mathematika</i> vol. 21 (1974) (see C.51), and photocopied manuscript working 'Kernel groups of twisted group rings over rings of global integers and of orders associated with monomial representations'	1973-1976
E.120	Correspondence <i>re</i> work in progress and visits	1977-1978
E.121	Correspondence <i>re</i> work in progress Includes typescript draft 'Unsuccessful generalizations of tame results to the wild case', annotated 'Wilson'.	1979-1990
E.122	W.	1971-1988
E.123	Y., Z.	1965-1984
E.124	Zelinsky, D. Zelinsky was based at Northwestern University, Evanston, Illinois.	1968, 1975
E.125	First name and unidentified	1972-1991, n.d.
SECTION F	THESES AND EXAMINATIONS, F.1-F.33	1961-1990, n.d.
F.1-F.29	THESES Theses of Ph.D. students supervised or examined by Fröhlich.	1961-1989
F.1-F.20	King's College London	1961-1982
F.1	'Near-rings with descending chain conditions' by Ronald Robert Laxton, April 1961	1961
F.2	'Galois Groups of Polynomials' by Raimundo Chela, September 1961	1961
F.3	'Topological Near Rings' by Veluppillai Tharmaratnam, September 1964	1964
F.4	'Some invariants of algebras' by Abraham Lue, November 1964	1964
F.5	'Some topics in the theory of categories' by Syed Afzal-ul Huq, November 1964	1964
F.6	'Module Theory over Generalized Ore Rings' by Mohammed Abdur Rauf Qureshi, September 1965	1965
F.7	'Some topics in the Theory of Orders' by Michael Edward Keating, 1967	1967

F.8	'Hermitian Forms over Algebras' by Allan William McEvet, 1967	1967
F.9	'Irreducibility criteria and some topics in Galois theory' by Howard Kleiman, 1968	1968
F.10	'Ideals over Orders in Commutative Separable Algebras' by Martin Singer, 1970	1970
F.11	'Ramification theory in the category of commutative rings with operators' by A.D. Barnard, October 1971	1971
F.12	'Representations of 23-Graded Groups' by Colin John Bushnell, February 1972	1972
F.13	'On the K-theory of Twisted Group Rings' by Stephen Mark Johnson Wilson, March 1972	1972
F.14	'Varieties of Ω -groups and associated functors' by João Cândido de Antas Furtado Coelho, November 1972	1972
F.15	'The Brauer Group of Dimodule Algebras' by F.W. Long, 1972	1972
F.16	'Picard and Hermitian Picard Groups of Non-Commutative Orders' by Michael William Rutter, 1975	1975
F.17	'Galois Module Structure of the Rings of Integers of L -extension' by Martin John Taylor, 1976	1976
F.18	'Monomial Representations and Galois Module Structure' by Adrian Maurice Nelson, May 1979	1979
F.19	'Realizable Classes in the Class Groups of Integral Group Rings' by Celia Ann Glass, July 1979	1979
F.20	'Class Groups of Group Rings over Quadratic Number Fields' by Soroosh Homayouni 1982	1982
F.21, F.22	University of Cambridge	1976, 1989
F.21	'Class number relations in algebraic number fields' by Colin Donald Walter, April 1976	1976
F.22	'Factorisability, Group Lattices and Galois Module Structure' by David Burns, December 1989	1989
F.23	University of Illinois	1983
	'Genus Fields and central extensions of number fields' by Stephen Bruce Watt, 1983.	
F.24-F.28	University of Bordeaux I	1975-1986
F.24	'Proprietes galoisiennes des anneaux d'entiers [...] by Jean Cougnard, March 1975	1975
F.25	'Structure galoisienne des anneaux d'entiers' by Philippe Cassou-Noguès, October 1977	1977

F.26	'Anneaux d'entiers et ordres associés' by Anne-Marie Bergé, April 1979	1979
F.27	'K-théorie algébrique et structure galoisienne des anneaux d'entiers' by Jacques Queyrut, March 1980	1980
F.28	'Sur la construction a noyau d'ordre p des p -extensions galoisiennes' by Richard Massy, March 1986	1986
F.29	Research Students	
	Two lists of Fröhlich's research students, one from online 'Mathematics Genealogy Project' http://genealogy.math.ndsu.nodak.edu/html/id.phtml?id=46030 (printed out May 2007).	
F.30-F.33	EXAMINATIONS	1982-1990, n.d.
	Examination and test papers, some with Fröhlich's calculations of answers.	
F.30	Cambridge Mathematical Tripos	1980
F.31	Cambridge Mathematical Tripos	1981
F.32	Cambridge Mathematical Tripos	1982
F.33	Other tests and examinations	1982-1990, n.d.

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