
List of publications Meinolf Geck

Diploma thesis, Ph.D. thesis, Habilitation:

- Eine Anwendung von MAPLE in der Darstellungstheorie der unitären Gruppen. Diplomarbeit, Lehrstuhl D für Mathematik, RWTH Aachen, 1987.
- Verallgemeinerte Gelfand-Graev Charaktere und Zerlegungszahlen endlicher Gruppen vom Lie-Typ. RWTH Aachen, Math.-Naturwiss. Fak./FB 1, Dissertation, 1990, 134 pp.
- Beiträge zur Darstellungstheorie von Iwahori-Hecke-Algebren. Habilitationsschrift, Aachener Beiträge zur Mathematik **11**, Verlag der Augustinus Buchhandlung, Aachen, 1995. x+171 pp., ISBN: 3-86073-420-2.

Co-Editor of Proceedings:

- (with R. W. Carter (eds.)) *Representations of reductive groups*. Publ. Newton Inst., Cambridge Univ. Press, Cambridge, 1998. viii+191 pp., ISBN: 0-521-64325-2.
- (with D. Testerman and J. Thévenaz (eds.)) *Group representation theory*, Presses Polytechniques et Universitaires Romandes, EPFL-Press, Lausanne, 2007. x+454 pp., ISBN: 978-0-8493-9243-6.

Books:

- (with G. Pfeiffer) *Characters of finite Coxeter groups and Iwahori-Hecke algebras*. London Math. Soc. Monographs, New Series **21**, Oxford University Press, New York 2000. xvi+446 pp., ISBN: 0-19-850250-8.
- *An introduction to algebraic geometry and algebraic groups*. Oxford Graduate Texts in Mathematics **10**, Oxford University Press, New York 2003. ix+307pp., ISBN: 0-19-852831-0.
- (with N. Jacon) *Representations of Hecke algebras at roots of unity*. Algebra and Applications **15**, Springer-Verlag, 2011. xii+401pp., ISBN: 978-0-85729-715-0.
- *Algebra: Gruppen, Ringe, Körper – Mit einer Einführung in die Darstellungstheorie endlicher Gruppen*. Edition Delkhofen, 2014. vi+150pp., EAN 978-3936413-15-1.

Software:

- (with G. Hiss, F. Lübeck, G. Malle, J. Michel and G. Pfeiffer), CHEVIE – A computer algebra system for computing and processing generic character tables for finite groups of Lie type and Hecke algebras; homepage at:

<http://www.math.rwth-aachen.de/~CHEVIE>

(See also publications [18], [67]).

- PyCox – A Python version of CHEVIE-GAP for (finite) Coxeter groups; available at <http://www.mathematik.uni-stuttgart.de/~geckmf/>. (See also publication [70].)

Articles:

1. Irreducible Brauer characters of the 3-dimensional special unitary groups in non-defining characteristic. *Comm. Algebra* **18** (1990), 563–584.
2. On the decomposition numbers of the finite unitary groups in non-defining characteristic. *Math. Z.* **207** (1991), 83–89.
3. Generalized Gelfand-Graev characters for Steinberg’s triality groups and their applications. *Comm. Algebra* **19** (1991), 3249–3269.
4. (with G. Hiß) Basic sets of Brauer characters of finite groups of Lie type. *J. reine und angew. Math.* **418** (1991), 173–188.
5. (with K. Lux) The decomposition numbers of the Hecke algebra of type F_4 . *Manuscripta Math.* **70** (1991), 285–306.
6. On the classification of l -blocks of finite groups of Lie type. *J. Algebra* **151** (1992), 180–191.
7. Brauer trees of Hecke algebras. *Comm. Algebra* **20** (1992), 2937–2973.
8. (with G. Pfeiffer) The unipotent characters of the Chevalley groups $D_4(q)$, q odd. *Manuscripta Math.* **76** (1992), 281–304.
9. Basic sets of Brauer characters of finite groups of Lie type, II. *J. London Math. Soc.* (2) **47** (1993), 255–268.
10. (with G. Pfeiffer) On the irreducible characters of Hecke algebras. *Advances in Math.* **102** (1993), 79–94.
11. A note on Harish–Chandra induction. *Manuscripta Math.* **80** (1993), 393–401.
12. The decomposition numbers of the Hecke algebra of type E_6 . *Math. Comp.* **61** (1993), 889–899.
13. On the character values of Iwahori–Hecke algebras of exceptional type. *Proc. London Math. Soc.* **68** (1994), 51–76.
14. (with G. Hiß and G. Malle) Cuspidal unipotent Brauer characters. *J. Algebra* **168** (1994), 182–220.
15. Basic sets of Brauer characters of finite groups of Lie type, III. *Manuscripta Math.* **85** (1994), 195–216.
16. (with G. Hiß and G. Malle) Towards a classification of the irreducible representations in non-defining characteristic of a finite group of Lie type. *Math. Z.* **221** (1996), 353–386.
17. (with G. Malle) Cuspidal unipotent classes and cuspidal Brauer characters. *J. London Math. Soc.* **53** (1996), 63–78.
18. (with G. Hiß, F. Lübeck, G. Malle and G. Pfeiffer) CHEVIE-A system for computing and processing generic character tables for finite groups of Lie type, Weyl groups and Hecke algebras. *Appl. Algebra Engrg. Comm. Comput.* **7** (1996), 175–210.
19. On the average values of the irreducible characters of finite groups of Lie type on geometric unipotent classes. *Doc. Math. J. DMV* **1** (1996), 293–317 (electronic).

20. (with G. Hiss) Modular representations of finite groups of Lie type in non-defining characteristic. *In: Finite reductive groups* (Luminy, 1994; ed. M. Cabanes), Progress in Math. **141**, pp. 195–249, Birkhäuser, Boston, MA, 1997.
21. (with R. Rouquier) Centers and simple modules for Iwahori-Hecke algebras. *In: Finite reductive groups* (Luminy, 1994; ed. M. Cabanes), Progress in Math. **141**, pp. 251–272, Birkhäuser, Boston, MA, 1997.
22. (with J. Michel) “Good” elements in finite Coxeter groups and representations of Iwahori-Hecke algebras. *Proc. London Math. Soc.* (3) **74** (1997), 275–305.
23. (with S. Lambropoulou) Markov traces and knot invariants related to Hecke algebras of B -type. *J. reine angew. Math.* **482** (1997), 191–213.
24. (with S. Kim) Bases for the Bruhat-Chevalley order on all finite Coxeter groups. *J. Algebra* **197** (1997), 278–310.
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27. Kazhdan-Lusztig cells and decomposition numbers. *Represent. Theory* **2** (1998), 264–277 (electronic).
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30. Representations of Hecke algebras at roots of unity. *Séminaire Bourbaki*, 50ème année, 1997-98, Astérisque No. 252 (1998), Exp. 836, 33–55.
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Preprints/In preparation:

- [16a] (with G. Malle), *The character theory of finite groups of Lie type: A guided tour*. Book project (in preparation). Preliminary version of first chapter (72 pages) at [arXiv:1608.01156](https://arxiv.org/abs/1608.01156).
- [17a] (with J. Müller), *Invariant bilinear forms on W -graph representations and linear algebra over integral domains*. Preprint, 41 pages, available at [arXv:1701.02331](https://arxiv.org/abs/1701.02331).
- [17b] *A first guide to the character theory of finite groups of Lie type*. (A pre-version of Chapter 2 of [16a].) Preprint, 34 pages, available at [arXv:1705.05083](https://arxiv.org/abs/1705.05083).

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