

BACKGROUND READING FOR “CHARACTERS OF FINITE GROUPS OF LIE TYPE”

As preparation for the summer school the participants should make sure they are familiar with the following topics.

Algebraic Geometry: The basic notions of affine algebraic geometry: affine varieties, morphism of varieties and the dimension of a variety. Also what it means for a set to be closed, open, irreducible or connected in the Zariski topology. This material is covered in [Gec03] and [Hum75].

Root Systems and Coxeter Groups: Basic notions such as positive and simple systems (or base) of roots, the length function, parabolic subsystems/subgroups. This material is covered in [Hum90] (see also the appendices to [MT11]).

Representation Theory: Ordinary representation theory of finite groups (over \mathbb{C} for instance). Specifically concepts such as characters, the character table, orthogonality relations and induction should be understood. See [Ser77], [Eti+11] and [Isa06].

As additional reading one may also want to make oneself familiar with the theory of linear algebraic groups. See for instance the books [Gec03], [Ste68] and [MT11]. Note that a PDF of [Ste68] is available on Steinberg’s homepage

<http://www.math.ucla.edu/~rst/>

REFERENCES

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- [MT11] G. Malle and D. Testerman, *Linear algebraic groups and finite groups of Lie type*, vol. 133, Cambridge Studies in Advanced Mathematics, Cambridge: Cambridge University Press, 2011, xiv+309.
- [Ser77] J.-P. Serre, *Linear representations of finite groups*, Translated from the second French edition by Leonard L. Scott, Graduate Texts in Mathematics, Vol. 42, Springer-Verlag, New York-Heidelberg, 1977, x+170.
- [Ste68] R. Steinberg, *Lectures on Chevalley groups*, Notes prepared by John Faulkner and Robert Wilson, Yale University, New Haven, Conn., 1968, iii+277.