Reading seminar schedule

Summer 2017

June 6, 2017

We read parts of the (700-page) book *Representation theory – A homological algebra point of view* by A. Zimmermann. An errata can be found at `http://www.lamfa.u-picardie.fr/alex/erratаRT.pdf`. Our main goal is to prove Puig's theorem on nilpotent block, i. e. that every nilpotent block of a finite group is Morita equivalent to the group algebra of its defect group. The book follows Külshammer's proof of that result.

We will assume that everyone is familiar with the basics like algebras, modules, group rings and tensor products. However, if you see need to discuss one of these topics in your talk, feel free to do so. Due to limited time we have to omit certain proofs I guess. Please decide on your own which proofs you want to present.

Due to several holidays we have 11 meetings:

24.04.17 Emil	**1.8 Some First Steps in Homological Algebra; Extension Groups** Definitions of projective and injective modules and important properties thereof (1.8.3, 1.8.4, 1.8.6, ?) Definition of syzygy (Heller) operator and Ext (1.8.10, 1.8.14, 1.8.15, 1.8.29, 1.8.31, 1.8.32, 1.8.33, ?) Interpretation of $H^i(G, M)$ for $i = 0, 1, 2$, Examples
08.05.17 Ulrike	**2.1.1 Relatively Projective Modules for Subalgebras** (6 pages)
15.05.17 Pablo	**2.1.2 Vertex and Source** (4 pages)
22.05.17 Inga	**2.3 Brauer Correspondence** (5 pages)
29.05.17 Jonathan	**2.10 Brauer Constructions and p-Subgroups** (8 pages) until 2.10.20 and without Section 2.10.2
12.06.17 Christoph	**3.1 Definitions** Definitions of categories, functors and natural transformations, Yoneda's lemma (3.1.26)
19.06.17 Alessandro	**4.1 Progenerators** (6 pages)
26.06.17 Yanjun	**4.2 The Morita Theorem** (7 pages)
03.07.17 Benjamin	**4.4.2 Nilpotent Blocks** (7 pages)
10.07.17 William	**Stable equivalences of Morita type** Definition 5.1.1, Proposition 5.1.6, Definitions 5.2.1, 5.3.5, Remark 5.3.7
17.07.17 Caroline	**5.10 Brauer Tree Algebras and the Structure of Blocks with Cyclic Defect Groups** Sections 5.10.1 and 5.10.4 (only parts from both)