ALGEBRA SEMINAR

Functorial equivalence of blocks of finite groups

By

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Abstract: Let k be an algebraically closed _eld of positive characteristic p > 0 and let F be an algebraically closed _eld of characteristic 0. In this talk we consider the F-linear category $F_{\_ ppk}$ of diagonal p-permutation functors over F. We _rst show that the category $F_{\_ ppk}$ is semisimple, and we give a parametrization of its simple objects, together with a description of their evaluations. Next, to any pair (G; b) of a _nite group G and a block idempotent b of kG, we associate a diagonal p-permutation functor $FT_{\_ G;b}$ in $F_{\_ppk}$. We _nd the decomposition of the functor $FT_{\_ G;b}$ as a direct sum of simple functors in $F_{\_ ppk}$. This leads to a characterization of nilpotent blocks in terms of their associated functors in $F_{\_ ppk}$.
Finally, for such pairs (G; b) of a _nite group and a block idempotent, we introduce the notion of functorial equivalence over F and we prove a corresponding _niteness theorem: for a given _nite p-group D, there is only a _nite number of pairs (G; b), where G is a _nite group and b a block idempotent of kG with defect isomorphic to D, up to functorial equivalence over F. We also give a su_cient condition for two pairs (G; b) and (H; c) to be functorially equivalent over F in the situation of Brou_e's abelian defect group conjecture.
This is joint work with Serge Bouc.

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Time: 11:30 – 12:30
Place: ZOOM. To request the event link, please send a message to sezer@fen.bilkent.edu.tr