

Lattices and cohomological Mackey functors for finite cyclic p -groups

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(Joint work with Blas Torrecillas.)

For a complete discrete valuation domain \mathcal{O} of characteristic 0 with residue field of characteristic p and a finite cyclic group G of p -power order, the category of left $\mathcal{O}G$ -lattices is in general too wild to permit a satisfactory description. In 2012 we showed that every such $\mathcal{O}G$ -lattice L fits in a short exact sequence

$$0 \longrightarrow Q \longrightarrow P \longrightarrow L \longrightarrow 0$$

for permutation $\mathcal{O}G$ -lattices Q and P , i.e., there exist left G -sets Ω and Υ such that $Q = \mathcal{O}[\Omega]$, $P = \mathcal{O}[\Upsilon]$. The proof of this somehow astonishing result is achieved by showing that the category of cohomological G -Mackey functors with coefficients in the category of \mathcal{O} -modules has global cohomological dimension 3.