# Algebra and Number Theory Seminar

## *Equivariant pretheories and invariants of torsors*

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**Abstract:** In this talk we introduce and study the notion of an equivariant pretheory. Basic examples of such pretheories are equivariant Chow groups, equivariant $K$-theory and equivariant algebraic cobordism. As a new example we define an equivariant version of the cycle (co)homology with coefficients in a Rost cycle module. We also provide a version of Merkurjev's spectral sequence for equivariant cycle homology.
As an application we generalize the theorem of Karpenko-Merkurjev on $G$-torsors and rational cycles; to every $G$-torsor $E$ and a $G$-equivariant pretheory we associate a graded ring which serves as an invariant of $E$. In the case of Chow groups this ring encodes the information concerning the motivic $J$-invariant of $E$ and in the case of Grothendieck's $K_0$ it encodes the indexes of the respective Tits algebras.

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