Oberwolfach Seminar

Topological Cyclic Homology and Arithmetic

Organizers: Dustin Clausen, Bonn
Lars Hesselholt, Copenhagen & Nagoya
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The purpose of the seminar is to introduce the higher algebra refinements of determinant and trace, namely, algebraic K-theory and topological cyclic homology, along with their budding applications in arithmetic geometry and number theory. In particular, we will use these ingredients to build Clausen's Artin map from K-theory of locally compact topological R-modules to the dual of his Selmer K-theory of R, and explain that for R a finite, local, or global field, this implies the classical Artin reciprocity.

Introductory reading:

J. Lurie, Math 281 Lectures 14-20, http://math.harvard.edu/~lurie/281.html.
A. Blumberg, D. Gepner, G. Tabuada, A universal characterization of higher algebraic K-theory, Geom. Topol. 17 (2013), 733–838.
T. Nikolaus, P. Scholze, On topological cyclic homology, Acta Math. 221 (2018), 203–409.
B. Bhatt, M. Morrow, P. Scholze, Topological Hochschild homology and integral p-adic Hodge theory, arXiv:1802.03261.
D. Clausen, A. Mathew, M. Morrow, K-theory and topological cyclic homology of henselian pairs, arXiv:1803.10897.
D. Clausen, A K-theoretic approach to Artin maps, arXiv:1703.07842.