

Topology Seminar

Lars Hesselholt

of Nagoya University and University of Copenhagen will be speaking
on

Higher algebra and arithmetic

on September 28 at 4:30 in
MIT Room 2-190

This talk concerns a twenty-thousand-year old mistake: The natural numbers record only the result of counting and not the process of counting. As algebra is rooted in the natural numbers, the higher algebra of Joyal and Lurie is rooted in a more basic notion of number which also records the process of counting. Long advocated by Waldhausen, the arithmetic of these more basic numbers should eliminate denominators. Notable manifestations of this vision include the Bökstedt-Hsiang-Madsen topological cyclic homology, which receives a denominator-free Chern character, and the related Bhatt-Morrow-Scholze integral p -adic Hodge theory, which makes it possible to exploit torsion cohomology classes in arithmetic geometry. Moreover, for schemes smooth and proper over a finite field, the analogue of de Rham cohomology in this setting naturally gives rise to the cohomological interpretation of the Hasse-Weil zeta function by regularized determinants envisioned by Deninger.