Kolchin Lecture

Wednesday, April 3, 2019
from 4:30 - 5:30pm
Room 520
Preceded by
Tea at 4pm,
Room 508

Professor Lars Hesselholt
(Nagoya University & University of Copenhagen)

Higher Algebra & Arithmetic

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 a cohomological interpretation of the Hasse-Weil zeta function by regularized determinants, as envisioned by Deninger.

2990 Broadway
Mathematics Hall
www.math.columbia.edu