Topology Seminar

Robert Burklund

of The University of Copenhagen will be speaking on

Beyond the telescope conjecture

on September 11 at 4:30 in
MIT Room 2-131

There is a natural dichotomy between telescopic ($T(n)$-local) and chromatic ($K(n)$-local) homotopy theory. Telescopic homotopy theory is more closely tied to the stable homotopy groups of spheres and through them to geometric questions, but is generally computationally intractable. Chromatic homotopy theory is more closely tied to arithmetic geometry and powerful computational tools exist in this setting. Ravenel's telescope conjecture asserted that these two sides coincide. I will present a family of counterexamples to this conjecture based on using trace methods to analyze the algebraic K-theory of a family of $K(n)$-local ring spectra beginning with the $K(1)$-local sphere. As a consequence of this we obtain a new lower bound on the average rank of the stable homotopy groups of spheres. Time permitting, I will then describe the galois group of the $T(n)$-local sphere and how this informs our understanding of telescopic homotopy theory. This talk is based on projects joint with Carmeli, Clausen, Hahn, Levy, Schlank and Yanovski.

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