Topology Seminar

Michael Andrews

of MIT will be speaking on

The v_1-periodic part of the Adams spectral sequence at an odd prime - dancers to a discordant system

on April 13 at 4:30 in
MIT Room 2-131

Algebraic topologists are interested in the class of spaces which can be built from spheres. For this reason, when one tries to understand the continuous maps between two spaces up to homotopy, it is natural to restrict attention to the maps between spheres first. The groups of interest are called the homotopy groups of spheres. Topologists soon realized that it is easier to work in a stable setting. Instead, one asks about the stable homotopy groups of spheres or, equivalently, the homotopy groups of the sphere spectrum. Calculating all of these groups is an impossible task but one can ask for partial information.

In particular, one can try to understand the global structure of these groups by proving the existence of recurring patterns; this is analogous to the fact that we cannot find all the prime numbers, but we can prove theorems about their distribution. These patterns are clearly visible in spectral sequence charts for calculating $\pi_*(S^0)$ and my thesis came about because of my desire to understand the mystery behind these powerful dots and lines, which others in the field appeared so in awe of. I will tell the story of the stable homotopy groups of spheres for odd primes at chromatic height 1, through the lens of the Adams spectral sequence.