Topology Seminar

Peter Patzt

of Purdue will be speaking on

High dimensional cohomology of congruence subgroups

on November 18 at 4:30 in
MIT Room 2-131

The level p principal congruence subgroup of $SL_n(Z)$ is defined to be the subgroup of matrices congruent to the identity matrix mod p. These groups have trivial cohomology in high enough degrees. In the 1970s, Lee and Szczarba gave a conjectural description of the top dimensional cohomology groups of these congruence subgroups. In joint work with Miller and Putman, we resolve this conjecture by proving it for $p = 2, 3, 5$ ($p = 3$ was known) and disproving it for larger primes by finding more cohomology than conjectured. In particular, we compute the top dimensional cohomology of these groups for $p = 2, 3, 5$ and we find new exotic cohomology classes for p at least 7 coming from the first homology group of the associated compactified modular curve.

I will also discuss joint work with Miller and Nagpal on a stability pattern in the high dimensional cohomology of congruence subgroups.

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