

# Topology Seminar

**Dev Sinha**

of The University of Oregon will be speaking on

## From Milnor invariants to E-infinity cochain structures

on March 10 at 4:30 in  
MIT Room 2-131

We share current work which goes back and forth between geometric and algebraic topology. We start with generalization of Milnor invariants of links, which works beyond where their indeterminacy limits them and extends to links any three-manifold. This generalization arises from analysis of the classical bar construction. (So we are making progress by connecting two pieces of mathematics developed in Fine Hall in the 1950's.) These ideas also lead to new algorithms to produce all polynomial functions on presented groups. We then share recent work relating cup product to intersection product on geometric cochains through vector field flows. This leads to a conjectural new approach to E-infinity structure on cochains by “resolving partial-definedness” rather than resolving non-commutativity. What unites these projects is a goal of producing homotopy invariants through a combination of tools including geometric cochains, configuration spaces and bar constructions.

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