The Worldwide Center of Mathematics

Dwyer-Fried Invariants

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Coffee, tea, cookies: 3:30pm
Talk: 4-5pm
929 Massachusetts Ave., Cambridge, Suite #102

Abstract: Given a finite CW-complex X and a positive integer k, the Galois covers of X with group of deck transformations Z^k are parametrized by the Grassmannian of k-planes in the vector space V = H^1(X, Q). Moving about this rational Grassmannian, and recording when the Betti numbers of the corresponding covers are all finite (up to some fixed degree i) defines certain subsets Omega^i_k(X) of Gr_k(V).

These sets (first studied by Dwyer and Fried in the 1980s) record delicate information on the homological finiteness properties of spaces and groups. I will present a method for determining the sets Omega^i_k(X), using the cohomology jumping loci of X, and the classical incidence correspondence between projective varieties and subvarieties of the Grassmannian. Under favorable conditions, the Omega-invariants are controlled by suitable arrangements of special Schubert varieties. In turn, these arrangements can be computed directly from the cohomology ring of X.

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All attendees will need to sign a release form, as the lecture will be recorded for distribution on the Web.