

HOMOTOPY OF SINGULAR VARIETIES VIA L_∞ PAIRS

MARCEL RUBIÓ

ABSTRACT. In this talk we show that for a complex algebraic variety with no weight-zero 1-cohomology classes, the fundamental group is strongly restricted; in particular, the irreducible components of the cohomology jump loci of rank one local systems containing the constant sheaf are complex affine tori. We prove this by studying the cohomology jump loci (or generalized Brill-Noether loci) via L_∞ pairs: the yoga here being that a deformation problem with cohomology constraints is governed by an L_∞ pair (L, M) , consisting of an L_∞ algebra L and an L -module M . The results we obtain are in contrast to the work by Simpson, Kapovich and Kollár, stating that every finitely presented group is the fundamental group of an irreducible complex algebraic variety with only normal crossings and Whitney umbrellas as singularities. This is joint work with Nero Budur.