

Meeting: 1000, Albuquerque, New Mexico, SS 14A, Special Session on Braids and Knots

1000-57-220 **Michael Falk*** (michael.falk@nau.edu), 17 Gauss Way, Berkeley, CA 94720. *Alexander invariants of line arrangements and great circle links.*

We report on recent work of the author and others concerning resonance and characteristic varieties of arrangements of complex lines in the complex plane. These are topological invariants of the complement, arising from the cohomology ring and Alexander matrix, respectively, which carry delicate information about finite abelian covers and nilpotent quotients of the fundamental group, and, conjecturally, about the Chen groups and lower central series of the fundamental group, and Massey products over \mathbb{Z}_p .

We contrast the theory for line arrangements, which is fascinating but relatively tame, with that for arrangements of planes in \mathbb{R}^4 , or great circles in S^3 , which is somewhat more pathological, and largely unexplored. (Received August 24, 2004)