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The cohomology rings of Gelfand-Zeitlin fibers

Gelfand-Zeitlin systems are completely integrable systems on unitary and orthogonal coadjoint orbits that share many features with toric systems. One thing that distinguishes them from toric systems is the presence of moment map fibers which are not tori. As some of the non-toric Gelfand-Zeitlin fibers are Lagrangian, they may play an important role in the geometric quantization and Fukaya category of unitary and orthogonal coadjoint orbits. They are also interesting from the perspective of topology of integrable systems on symplectic manifolds. This motivates a better understanding of the topology of these fibers. In this talk I will present recent work with Jeffrey Carlson in which we computed the cohomology rings of all Gelfand-Zeitlin fibers. Following earlier work by other authors, our results can be phrased nicely in terms of the combinatorics of the associated Gelfand-Zeitlin polytopes.