

MEGL Project Proposal: Subrings of the equivariant cohomology of the flag manifold

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Many rings arise as topological invariants of spaces constructed using geometry or even linear algebra. One of these spaces is called the *flag manifold*; it consists of the set of sequences of vector spaces $V_0 \subset V_1 \subset \cdots \subset V_n$, each vector space contained in the next, in n -dimensional complex space, with some dimensional constraints. An interesting associated ring to this space is its *equivariant cohomology*, which has some very special properties related to the geometry.

This project will investigate some circumstances when a subring of the equivariant cohomology corresponds to a geometric subset of the flag variety.

Applicants should have a strong comfort with algebra (Math 321) and be comfortable in linear algebra (322), topology and/or algebraic geometry.

