

COLLEEN ROBLES
(TEXAS A&M)

Homological rigidity of Schubert varieties in compact Hermitian symmetric spaces

The integral homology of a compact Hermitian symmetric spaces (CHSS) is generated by the homology classes of its Schubert varieties. Most Schubert varieties are singular. In 1961 Borel and Haefliger asked: when can the homology class $[X]$ of a singular Schubert variety be represented by a smooth subvariety Y of the CHSS?

Remarkably, the subvarieties Y with $[Y] = [X]$ are integrals of a (linear Pfaffian) differential system. I will discuss recent work with Dennis The in which we give a complete list of those Schubert varieties X for which there exists a first-order obstruction to the existence of a smooth Y . This extends (independent) work of M. Walters, R. Bryant and J. Hong.

The sine qua non of our analysis is a new characterization of the Schubert varieties by a non-negative integer and a marked Dynkin diagram. The description generalizes the well-known characterization of the smooth Schubert varieties by connected subdiagrams of the Dynkin diagram.

I will illustrate the talk with many examples.