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Title: Steinberg modules and high-dimensional rational cohomology of symplectic groups

Abstract: While Borel completely computed the rational cohomology of Sp_{2n}(Z) in degrees that are small compared to n, it remains largely mysterious in high degrees. In this talk, I will discuss what is known and present recent work exploring these high-dimensional cohomology groups. The starting point is a theorem of Borel-Serre, which shows that the virtual cohomological dimension of Sp_{2n}(Z) is n^2 and that its rational cohomology is, hence, trivial in degrees greater than n^2. I will explain connections to the study of Steinberg modules, the study of moduli spaces, a conjecture of Church-Farb-Putman and guiding analogies with other arithmetic groups such as SL_{n}(Z). This talk is primarily based on joint works with Benjamin Brück and Peter Patzt.