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Asymptotic representation theory over \mathbb{Z} and cohomology of arithmetic groups

Representation theory over \mathbb{Z} is famously intractable, but "representation stability" provides a way to get around these difficulties, at least asymptotically, by enlarging our groups until they behave more like commutative rings. Moreover, it turns out that important questions in topology, number theory, representation theory, and other fields correspond to asking whether familiar algebraic properties hold for these "rings". I'll explain how these connections work, with a focus on the applications to cohomology of arithmetic groups. No knowledge of representation theory required.