

# Goresky–Pardon classes and Tate extensions

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An automorphic vector bundle on a Shimura variety will in general not extend to as a bundle to its Baily–Borel compactification. Yet Goresky and Pardon showed that the Chern classes of such a bundle do so in a natural manner. They wondered whether these classes lie in rational cohomology. We show that these extensions have a natural description in the setting of mixed Hodge theory and may not lie in rational cohomology. We apply this to the stable cohomology of the Baily–Borel compactification of the ppav’s and show that they yield the basic nontrivial Tate extensions.

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