

Ben Davison : Stacks of semistable sheaves on K3 surfaces

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I'll explain some new results on the Borel-Moore homology of stacks of coherent sheaves on K3 surfaces, as well as intersection cohomology of coarse moduli spaces. For nonprimitive Chern classes, these spaces can be highly singular. Nonetheless, considering all multiples of a given class simultaneously, we (in joint work with Lucien Hennecart and Sebastian Schlegel Mejia) have a cohomological upgrade of the integrality theorem from DT theory, connecting the intersection cohomology of the coarse spaces with the Borel-Moore homology of the stacks. Aside from the integrality theorem itself, applications include a new description of Maulik-Toda-style GV invariants of local K3 surfaces, a proof of the Halpern-Leistner purity conjecture for the BM homology of the stack, and wall-crossing invariance results.