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Bounding Brauer groups of K3 surfaces using moduli spaces

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The Brauer group of an algebraic variety is a group with many applications, in particular to the study of rational points. For a K3 surface over a number field, the transcendental part of its Brauer group is finite. It was shown by Cadoret-Charles that the size of its p primary torsion is uniformly bounded for K3 surfaces in one-dimensional families.

We give a different proof of this result for one-dimensional families of K3 surfaces with a polarization by a fixed lattice. To be precise, we construct moduli spaces of K3 surfaces with a lattice polarization and a Brauer class, and use the geometry of their complex points to prove boundedness of Brauer groups for the K3 surfaces they parametrize. I will explain the construction and give a sketch of the proof of our boundedness result. This is joint work with D. Bragg and A. Várilly-Alvarado.

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