

# EXPLICIT UNIFORM BOUNDS FOR BRAUER GROUPS OF SINGULAR K3 SURFACES

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By analogy with Merel's theorem on torsion groups of elliptic curves, Várilly-Alvarado has conjectured that Brauer groups (modulo constants) of K3 surfaces over number fields are bounded by a number that only depends on degree of the field and the isomorphism class of the Néron-Severi lattice. Orr and Skorobogatov proved this conjecture for K3 surfaces of CM type, showing the existence of a bound that only depends on the degree of the number field. I will present joint work with Francesca Balestrieri and Alexis Johnson in which we re-prove Várilly-Alvarado's conjecture for singular K3 surfaces, this time with an explicit bound. This bound is very large in general but can be improved dramatically in certain cases, e.g. if the geometric Picard group is generated by divisors defined over the base field. When combined with results of Kresch–Tschinkel and Poonen–Testa–van Luijk, this shows that the Brauer–Manin sets for these varieties are effectively computable.

*Joint work with Francesca Balestrieri (The American University of Paris) and Alexis Johnson (DryvIQ).*