

Speaker: Philipp Habegger

Title: Some Unlikely Intersections Beyond André-Oort

Abstract: This is joint work with Jonathan Pila. A particular case of the André-Oort Conjecture characterizes the algebraic curves in \mathbb{A}^n which contain infinitely many points whose coordinates are all j -invariants of elliptic curves with complex multiplication. Such curves can be described quite explicitly in terms of modular curves. This case of the conjecture was first proven by André and independently by Edixhoven under the Generalized Riemann Hypothesis and later again unconditionally by Pila.

The more general conjecture of Pink often leads to finiteness statements when intersecting curves with special subvarieties of \mathbb{A}^n of sufficiently small, but positive, dimension. In this talk we present progress into this direction. Our proofs follow a strategy devised by Zannier based on a result of Pila and Wilkie. This describes the distribution of rational points on sufficiently "tame" subsets of \mathbb{R}^n . We also need a refinement by David or Pellarin of isogeny estimates for elliptic curves by Masser-Wüstholz as well as a theorem of André from Hodge theory.