

FALTINGS' THEOREMS VIA EQUIDISTRIBUTION

Speaker: Junyi Xie
Peking University

Time: Mon., Oct.19th, 16:00-17:30

Venue: Room 102, SCMS

Abstract: Recently, with Ziquan Yang, we gave a new proof of Faltings' isogeny theorem. More precisely, we show that Yuan's equidistribution theorem can be used to “pump” homomorphisms and semisimplicity from finite fields to number fields, thereby reducing Faltings' theorem directly to Tate's theorem. In fact, combining our method with an ultraproduct argument also gives a new proof of the finiteness of isomorphism classes within an isogeny class. This was shown by Yap, who used our paper as a prompt for GPT-6 Astra. Together with the classical Shafarevich–Parshin trick, this gives a new proof of the Mordell conjecture via equidistribution.