The Lang-Vojta conjecture and arithmetic finiteness results for smooth hypersurfaces

Ariyan Javanpeykar

Résumé : In 1983, Faltings proved the arithmetic Shafarevich conjecture for curves : for a finite set S of finite places of a number field K and an integer $g > 1$, the set of isomorphism classes of curves of genus g over K with good reduction outside S is finite. The aim of this talk is to explain that Faltings's finiteness theorem for curves fits in well with the Lang-Vojta conjecture. Moreover, we shall consider analogues of Faltings's finiteness theorems for hypersurfaces. We will prove, assuming the conjecture of Lang-Vojta, the analogous finiteness statement for smooth hypersurfaces of fixed degree and fixed dimension by constructing a moduli space for "hypersurfaces with level structure". Unconditionally, we prove the Shafarevich conjecture for hypersurfaces of Hodge level at most one, and some hypersurfaces of Hodge level 2. This is joint work with Daniel Loughran.