Intersection of Arithmetic Cycles and Automorphic Forms December 12–16, 2005

Mini course on Arakelov geometry I

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Abstract

We start by recalling the definition of the (naive) Weil height for rational points in projective space measuring the arithmetic complexity of these points. Then, we give a survey on the theory of cohomological arithmetic Chow groups developed jointly with J. Burgos and U. Kühn. As a special case, we will recover Arakelov Geometry as developed by H. Gillet and C. Soulé. In particular we find an interpretation of the classical Weil height by means of arithmetic intersections. This, in turn, gives rise to a definition of a height for higher dimensional cycles.