Developments in the Interactions of Model Theory and Number Theory

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I will start with the works of Ax and Ax-Kochen on pseudo-finite fields and p-adic fields. I will present joint works of Angus Macintyre and myself on model theory of adeles, connections to number-theoretical questions on zeta functions and arithmetical equivalence of number fields going back to Iwasawa, and solution of Ax's 1968 problem on residue rings of the integers. I will then present joint works of Ehud Hrushovski and myself on imaginaries in adeles and their connection to quotient structures in arithmetical algebraic geometry.