Online Number Theory Seminar

7 January 2022. – 17:00-17:50

Jan-Hendrik Evertse: Hermite equivalence of polynomials
(joint work with Kálmán Győry and László Remete)

In the 1850-s, Hermite introduced an equivalence relation for polynomials and showed that the polynomials of integer coefficients of given degree and discriminant fall apart in finitely many equivalence classes for this relation. Hermite's equivalence relation was apparently overlooked up to now. Much later, in 1972, Birch and Merriman showed that the integer polynomials of given degree and discriminant can be divided into finitely many $GL_2(\mathbb{Z})$-equivalence classes. The result of Birch and Merriman is much deeper, based on a finiteness result for unit equations, which was not available to Hermite. In my talk, I will compare Hermite's equivalence relation with the much better known $GL_2(\mathbb{Z})$-equivalence. As will be discussed, any two $GL_2(\mathbb{Z})$-equivalent polynomials are equivalent in the sense of Hermite, whereas the converse is in general not true.