Online Number Theory Seminar

14 November 2025. – 17:00-17:50

Sz. Tengely: Cubic Diophantine equations related to the Mordell-Schinzel conjecture.

We consider a family of cubic Diophantine equations of the form $xyz = G(x, y)$, where $G \in Z[x, y]$. Based on works of Mordell and Schinzel, recently, Kollár and Li gave an elegant argument to show that there are infinitely many integral points on these cubic surfaces. In some special families of equations we provide a different proof of the conjecture. It turns out that there exist parametric solutions depending on Fibonacci and Lucas numbers. In certain special cases we also provide algorithm to determine all solutions of these equations with z fixed by means of Runge's method.