## Online Number Theory Seminar

9 May 2025. - 17:00-17:50

## G. Batta: On Diophantine graphs

A set of n distinct positive integers is called a Diophantine n-tuple, if the product of any two distinct terms from the set increased by one is a square. In the present talk, extending the problem of Diophantine tuples, we study Diophantine graphs. Given a finite set V of positive integers, the induced Diophantine graph D(V) has vertex set V, and two numbers in V are linked by an edge if and only if they form a Diophantine pair. A finite graph G is a Diophantine graph if it is isomorphic to D(V) for some V. We present various results for Diophantine graphs, concerning representability and extendability questions, related to the edge density, and also for their chromatic number.

The presented new results based on joint work with L. Hajdu and A. Pongracz.