COLLOQUIUM DI TEORIA DEI NUMERI

# Lunedì 14 Ottobre 2024, ore 16:00

## AULA M1

### Dipartimento di Matematica e Fisica

### Università degli Studi Roma Tre

### Largo San L. Murialdo 1

Speaker: Ken Ono (*University of Virginia*)

Title: Partitions Detect Primes

Abstract: This talk presents “partition theoretic” analogs of the classical work of Matiyasevich that resolved Hilbert’s Tenth Problem in the negative. The Diophantine equations we consider involve equations of MacMahon’s partition functions and their natural generalizations. Here we explicitly construct infinitely many Diophantine equations in partition functions whose solutions are precisely the prime numbers. To this end, we produce explicit additive bases of all graded weights of quasimodular forms, which is of independent interest with many further applications. This is joint work with Will Craig and Jan-Willem van Ittersum.