

*Talk**April 1, 09:00 – 09:50***Claudia Rella**

Institut des Hautes Études Scientifiques

**The arithmetic of non-perturbative effects**

Perturbative expansions in quantum theory, particularly in quantum field theory and string theory, are typically factorially divergent due to hidden non-perturbative sectors. First developed in the 1970s and 80s, the theory of resurgence provides universal machinery to extract non-perturbative effects, which are encoded in exponentially small corrections, from the perturbative series itself. Very recently, it has been observed that, under special assumptions, non-perturbative data accessed via resurgent methods exhibit intrinsic number-theoretic properties, which appear to be rooted in symmetries of the geometry underlying the quantum theory. The framework of modular resurgence aims to formalise this observation. In this talk, I will first introduce the systematic, algebraic approach of resurgence to the problem of divergences. I will then describe the emerging bridge between non-perturbative effects and arithmetic structures and conclude with a concrete example from topological string theory.