## Contributed talk on September 23, 2024, 15:30 pm

## Speaker: Pedro Magalhães, Universitat de Barcelona

Title: Formality of Kähler manifolds revisited

## Abstract:

The Formality Theorem of Deligne-Griffits-Morgan-Sullivan states that the rational homotopy type of a compact Kähler manifold is entirely determined by its cohomology ring. This provides homotopical obstructions for a compact complex manifold to admit a Kähler metric. On the other hand, by results of Deligne and Morgan, the rational homotopy groups of simply connected Kähler manifolds carry natural mixed Hodge structures. However, there exist diffeomorphic compact Kähler manifolds with the same pure Hodge structures on cohomology but with different mixed Hodge structures on rational homotopy groups. To better understand this phenomenon, in this talk I will introduce a "mixed Hodge formality" theory and provide complex geometric invariants obstructing this stronger notion of formality.