

Abstract: The course provides an introduction to a new mathematical method for the evaluation of Feynman Integrals and Scattering Amplitudes in Quantum Field Theory, which makes use of concepts borrowed from Differential Geometry and Algebraic Topology. The plan of the lectures is to cover the basics of four aspects: Intersection Theory for Twisted de Rham co-homology; Aomoto-Gel'fand Hypergeometric Functions; Morse Theory; and the algebra of Feynman Integrals. The exam will consist in the discussion of a short-term study and/or research project.