

# Modular Forms and Differential Equations

*jeudi 19 septembre 2024 09:30 (1 heure)*

The theory of automorphic forms originated in the late 19th and early 20th century (works of Klein, Fricke, Poincaré and many others) from the study of differential equations, but this aspect has become somewhat forgotten in the course of the years. In the lecture, I will talk about the many connections that exist between modular forms and differential equations of various types, especially linear (like the ones used in Apéry's famous proof of the irrationality of  $\zeta(2)$  and  $\zeta(3)$ , or the “modular linear differential equations” that have become important in conformal field theory and the theory of vertex operator algebras), but also non-linear. The latter include the so-called Chazy differential equation occurring in the theory of Painlevé equations and also various operators arising from the theory of Frobenius manifolds. I will talk about some of these connections and their applications.

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