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Short course on D-Modules

by Luca Prelli (CMAFCIO)

Introduction to the algebraic theory of linear systems of differential equations

Abstract:

Algebraic study of linear partial differential operators is widely developed. One of the most classical problem is weather a functional space of solutions can distinguish different (equivalent classes) of linear systems.

We start by considering a linear differential operator with holomorphic coefficients on a neighborhood of the origin. We see the relation between linear differential operator, linear differential system and meromorphic connection.
We first consider regular meromorphic connections (roughly speaking, systems with simple poles at the origin) and see that, after a suitable base change, they can be written in a "normal" form. This allows us to find explicit solutions and see that holomorphic ones are enough to distinguish different equivalent classes of regular systems.

In the irregular case holomorphic functions are no longer the right functional space. We then introduce tempered holomorphic functions and see that they can distinguish a large class of irregular systems.

16h30 – room 6.2.38

17 | March (thursday)

22 | March (tuesday)

2 | April (saturday)

4 | April (monday)

(each course will take about 1h30m)

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Local: Departamento de Matemática,C6 – Piso 2