

# COLÓQUIO DE MATEMÁTICA

Quarta-feira, 29 de setembro de 2021 às 16h00

## An updated overview of the regular Riemann-Hilbert correspondence for D-modules

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Convívio antes do Colóquio no átrio do C6, com café,  
chá e bolos (15h30 até 16h00)

**Sumário:**  
Let  $X$  be a complex manifold. In this talk we first present an overview of the construction of Kashiwara's Riemann-Hilbert functor as a quasi-inverse to the solution functor for regular holonomic modules. Then we will explain how this construction can be adapted to a relative (smooth) framework, where instead of differential operators on  $X$  we deal with relative differential operators associated to a projection  $p: X \times S \dashrightarrow S$ , being  $S$  a complex manifold. This summarizes recent joint work with Claude Sabbah and Luisa Fiorot, where we treat the general case for the dimensions of  $X$  and  $S$ , completing a program started by myself with Claude Sabbah around 2010.  
By that time, we aimed to study the case of modules underlying a mixed twistor D-module so that we only needed to assume that  $S$  was a complex curve.  
Recent collaborations with Luisa Fiorot allowed to treat general regular holonomic D-modules and general dimensions. We will illustrate these rather technical constructions with simple examples.