Title: Formal local Fourier transforms and applications.

Abstract: The Fourier transform of a holonomic $\mathcal{D}$-module M on $\mathbb{A}^1$ is a holonomic $\mathcal{D}$-module which, in general, has irregular singularities even if M has none. Information about the formal structure of these singularities can be obtained with the aid of the formal local Fourier transforms, named after the corresponding functors defined by G. Laumon in the ℓ-adic setting and which share a number of properties with them, e.g. a stationary phase formula can be proved.

In the talk we will define these objects using microlocal differential operators and we will state some of their applications (to the study of Gevrey-type conditions in the formal decomposition of a $\mathcal{D}$-module germ and to N. Katz's index of rigidity).