Maxim Kontsevich (IHES)

1st talk: Riemann-Hilbert correspondence in dimension 1.

Abstract: The goal of the lecture is to provide a detailed account of various aspects of Riemann-Hilbert correspondence for the case of complex curves, and present concrete examples for the lectures by P. Schapira and Y. Soibelman.

Plan: 1) Formal and meromorphic classifications of
meromorphic connections over the punctured disk.
2) Logarithmic compactifications of the cotangent bundle.
3) Global Riemann-Hilbert correspondence, Legendrian links.
4) Riemann-Hilbert correspondence for DQ-modules.

2nd talk: Riemann-Hilbert correspondence for quantum torus.

Abstract: Quantum torus (in dimension 1) is the noncommutative algebra generated by two invertible elements X,Y satisfying the relation XY=qYX, where q is a non-zero complex number which is not a root of 1.
I will describe various classification results for holonomic modules. The "Betti" side (constructible sheaves) in the Riemann-Hilbert correspondence is replaced (for the case of quantum torus) by the category of coherent sheaves on the elliptic curve C^*/q^Z, if the norm of q is not equal to 1.

Plan: 1) Formal classification for punctured disk, and
semistable bundles on elliptic curve.
2) Meromorphic classification.
3) Global classification, two anti Harder-Narsimhan filtrations.
4) An analog of distributions.
5) Modularity.