Perverse sheaves, microlocal sheaves and perverse Schobers

Mikhail Kapranov (IPMU, Tokyo)

(1) We will discuss the classical problem of classification of perverse sheaves (i.e., description of categories of perverse sheaves in terms of quivers and relations) from the point of view of localization on a totally real Lagrangian skeleton in the base. This is different from the more standard microlocal approach which leads to complex Lagrangians in the cotangent bundle.

(2) This lecture will present the theory of microlocal sheaves on nodal curves which can be seen as topological analogs of Deformation Quantization modules on a symplectic surface, supported on a nodal curve. We will show how such categories lead to multiplicative analogs of Nakajima quiver varieties as well as to their higher genus generalizations.

(3) We will discuss the concept of perverse Schobers, conjectural categorical analogs of perverse sheaves. We will give a precise definition of perverse Schobers on a Riemann surface and use it to construct a topological Fukaya category with coefficients in a Schober.