PERVERSE SHEAVES AND SINGULARITIES

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Abstract: The study of singularities of analytic spaces can be approached from many different perspectives. The main player in each scenario, however, is the Milnor fibration: a locally trivial fibration associated to any complex analytic function whose fiber controls the topological type of the singularity.

Starting with the classical setting of an isolated hypersuface singularity on affine space, we build in abstraction toward non-isolated singularities on arbitrary complex analytic spaces using the language of perverse sheaves and vanishing cycles. We hope to build the intuition that this machinery allows one to work with a "sheaf of Milnor fibers", defined up to cohomological data. If there is enough time, we will discuss this machinery in the greater context of the microlocal theory of sheaves on manifolds.