

Complex analytic vanishing cycles for formal schemes

Abstract: In my work in progress, I've constructed integral vanishing cycles complexes for special formal schemes over the ring of formal power series with complex (resp. real) coefficients which extend the classical objects defined for schemes over that ring. They are used to define integral "étale" cohomology groups of certain non-Archimedean analytic spaces over the corresponding field of Laurent power series. Those are finitely generated abelian groups provided with a quasi-unipotent action of the fundamental group of the punctured complex plane (resp. the semi-direct product of the latter with the group of order two), and they give rise to all ℓ -adic étale cohomology groups of the space. After a short survey of this work, I'll explain a comparison theorem which relates the q -th "étale" cohomology group with complex (resp. real) coefficients and the q -th de Rham cohomology group in a form that allows to recover each of these groups from another one.