COMPLEX ANALYTIC VANISHING CYCLES FOR FORMAL SCHEMES

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Abstract. Given a nonzero complex analytic function defined in a neighborhood of a point in a complex analytic space and equal to zero at the point, there are associated integral vanishing cycles cohomology groups. They are finitely generated abelian groups provided with a quasi-unipotent action of the fundamental group of the punctured complex plane. I will explain results which imply that those groups depend only on the formal completion of the local ring of the point. One can in fact extend the construction of those groups to arbitrary nonzero elements of the maximal ideal of the formal completion and, more generally, to a broad class of formal schemes over the formal completion of the ring of convergent power series at zero of the complex plane.