1093-58-188 **Ursula Ludwig*** (ursula.ludwig@math.u-psud.fr), Département de Mathématiques, Faculté des Sciences d'Orsay, Université Paris-Sud, 91405 Orsay Cedex, France. *Witten deformation on singular spaces using radial Morse functions.*

The Witten deformation is an analytical method proposed by Witten in the 80's which, given a Morse function $f : M \to \mathbb{R}$ on a smooth compact Riemannian manifold M, leads to a proof of the famous Morse inequalities.

The aim of this talk is to present a generalization of the Witten deformation to a singular space X with cone-like singularities and radial Morse functions. As a result one gets Morse inequalities for the L^2-cohomology, or dually for the intersection homology of the singular space X. Moreover, as in the smooth theory, one can relate the Witten complex, *i.e.* the complex generated by the eigenforms to small eigenvalues of the Witten Laplacian, to an appropriate geometric complex (a singular analogue of the smooth Morse-Thom-Smale complex).

Radial Morse functions are inspired from the notion of a radial vectorfield on a singular space. Radial vectorfields have first been introduced by Marie-Hélène Schwartz to define characteristic classes on singular varieties. (Received August 13, 2013)