

**Javier de Bobadilla**

**Title: Reflexive modules on normal Gorenstein Stein surfaces**

**Abstract:** We generalize Artin-Verdier, Esnault and Wunram construction of McKay correspondence to arbitrary Gorenstein surface singularities. The key idea is the definition and a systematic use of a degeneracy module, which is an enhancement of the first Chern class construction via a degeneracy locus. We study also deformation and moduli questions. Among our main result we quote: a full classification of special reflexive MCM modules on normal Gorenstein surface singularities in terms of divisorial valuations centered at the singularity, a first Chern class determination at an adequate resolution of singularities, construction of moduli spaces of special reflexive modules, a complete classification of Gorenstein normal surface singularities in representation types, and a study on the deformation theory of MCM modules and its interaction with their pullbacks at resolutions. As a consequence of the theory we confirm a conjecture of Drodz, Greuel and Kashuba in the Gorenstein case. Joint work with Agustin Romano.