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**Andras Nemethi\*** ([nemethi@math.ohio-state.edu](mailto:nemethi@math.ohio-state.edu)), Department of Mathematics, The Ohio State University, 231 W 18th Avenue, Columbus, OH 43210. *Seiberg-Witten invariants and surface singularities.*

I will present a very general conjecture formulated by L. Nicolaescu and me which relates the analytic invariants of normal surface singularities (e.g. the geometric genus) to the Seiberg-Witten invariant of the link, provided that the link is a rational homology sphere. In particular, the conjecture claims that for  $\mathbb{Q}$ -Gorenstein singularities the geometric genus is topological, provided that the link is a rational homology sphere.

As supporting evidence I discuss those cases when it was verified: singularities with good  $C^*$ -actions, suspension hypersurface singularities, and some rational end elliptic singularities.

These results extend previous work of Artin, Laufer, S.S.-T. Yau, Fintishel-Stern and Neumann-Wahl.

Finally, I will analyze another conjecture formulated by R. Mendris and me: if the link of a hypersurface singularity is a rational homology sphere then it determines its embedded topological type, the equivariant Hodge numbers and the multiplicity. This conjecture was verified for weighted homogeneous and suspension singularities. (Received January 21, 2003)