İSTANBUL ANALYSIS SEMINARS

REAL ANALYTIC MAPS AND STABLE HAMILTONIAN STRUCTURES

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Abstract: We consider a real analytic map f from $\mathbb{R}^4$ to $\mathbb{R}^2$ with a singularity at 0. One method to investigate the singularity is to work on its link L. If 0 is an isolated singularity then it is well-known that L is a fibered link in the 3-sphere S^3. This describes immediately a contact structure on S^3. In this talk we suggest that even if 0 is not an isolated singularity, we can associate to the singularity a well-defined stable Hamiltonian structure on S^3, provided that f describes a Seifert fibration on S^3, L being a multi-link in this fibration. This condition is satisfied, for example, when f is complex analytic or f is given as $g\bar{h}$ with g and h being complex analytic. If the link is already fibered, the stable Hamiltonian structure is nothing but the contact structure mentioned above. Our construction is in fact far more general: given a Seifert multi-link (not necessarily associated to a map from $\mathbb{R}^4$ to $\mathbb{R}^2$) in a Seifert fibered 3-manifold, we build a well-defined stable Hamiltonian structure on the 3-manifold.

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