Title: Lipschitz geometry of complex surfaces: analytic invariants and equisingularity

Abstract: The question of defining a good notion of equisingularity of a reduced hypersurface $X \subset \mathbb{C}^n$ along a non-singular complex subspace $Y \subset X$ in a neighborhood of a point $0 \in X$ has a long history which started in 1965 with works of Zariski. One of the central concepts introduced by Zariski is the algebro-geometric equisingularity, called nowadays Zariski equisingularity, which defines the equisingularity inductively on the codimension of $Y$ in $X$ by requiring that the reduced discriminant locus of a suitably general projection $p: X \rightarrow \mathbb{C}^{n-1}$ be itself equisingular along $p(Y)$.

When $Y$ has codimension one in $X$, i.e., when dealing with a family of plane curves transversal to the parameter space $Y$, it is well known that Zariski equisingularity is equivalent to the main notions of equisingularity such as Whitney conditions for the pair $(X \setminus Y, Y)$ and topological triviality. However, these properties fail to be equivalent in higher codimension.

I will present a recent joint work with Walter Neumann in which we prove that in codimension 2, for a family of hypersurfaces in $\mathbb{C}^3$ with isolated singularities, Zariski equisingularity is equivalent to the constancy of the family up to bilipschitz semi-algebraic homeomorphism with respect to the outer metric.