SEMINARIO DE GEOMETRIA ALGEBRAICA

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Impartirá la conferencia

Isometric immersions in locally conformally Kähler geometry

Resumen.

The celebrated Kodaira Embedding Theorem gives geometric and cohomological conditions under which analytic geometry reduces to algebraic geometry: it gives a holomorphic embedding for Hodge manifolds into some projective space. In general, such an embedding is not isometric. The problem of which real-analytic Kähler manifolds admit an isometric immersion into $\mathbb{C}P^n$, or more in general into complex space forms has been studied by Eugenio Calabi, by introducing the *diastasis function.*

Locally conformally geometry is a sort of "equivariant (homothetic) Kähler geometry" and a first specific non-Kähler setting. Despite the Kähler condition imposes strong topological obstructions, almost all known compact complex surfaces admit locally conformally Kähler structures, the only exceptions being the Inoue surfaces. In the lcK context, the analogue of the projective space is played by *Hopf manifolds*, and an analogue of the Kodaira embedding has been proven by Liviu Ornea and Misha Verbitsky.

Inspired by Eugenio Calabi's work, we would like to study isometric immersions of lcK manifolds into Hopf manifolds. This forces the lcK manifold to be Vaisman of rank 1, and asks for writing its positive potential as a sum of squares of norms

of holomorphic functions. In particular, we focus on non-Kähler compact complex surfaces.

The talk is based on a joint work with Michela Zedda.