

# SEMINÁRIO DE GEOMETRIA

## When the Ricci tensor is of Codazzi type: absence of genericity.

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22/11/17 (Quarta-feira)  
10:30 Horas  
Mini-auditório do MAT (Sala A, térreo)

**Abstract:** We deal with compact Riemannian four-manifolds, the curvature tensor of which is harmonic as a 2-form valued in 2-forms, that is, its Ricci tensor satisfies the Codazzi equation. Equivalently, the Levi-Civita connection is required to be a critical point of the Yang-Mills functional.

The results reduce the classification of such manifolds (different from those belonging to otherwise-familiar types) to a problem in real algebraic geometry. The latter problem constitutes a separate project, joint with Paolo Piccione, the work on which is still in progress.

The reduction argument proceeds by steps based on values of two natural invariants,  $r$  and  $w$ , forming the maximal numbers of distinct eigenvalues of the Ricci and self-dual Weyl tensors.