

Seminari de Geometria Algebraica 2009/2010 (UB-UPC)

Divendres 9 d'abril a les 16 h. a l'aula B1 FM-UB

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Satake compactifications, moment map and first eigenvalue of the Laplacian

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In 1970 Hersch proved that the first eigenvalue of the Laplacian, as a functional on the set of one Riemannian metrics on S^2 with unit volume, attains its maximum at the round metric. In 1994 Bourguignon, Li and Yau generalised this result to Kaehler metrics on $\mathbb{C}\mathbb{P}^n$. Their main tool is a map from $SL(n)/SU(n)$ to the set of positive definite Hermitian matrices with trace 1.

In the talk I will discuss joint work with L. Biliotti showing that the map of Bourguignon, Li and Yau is a special case, corresponding to \mathbb{P}^n , of a more general construction that works for arbitrary flag manifolds. I will show how this yields an analogue of Hersch theorem on any compact Hermitian symmetric space and I will briefly discuss how this establishes a connection between Satake compactifications and flag manifolds.
