Actividad Formativa del máster y del doctorado en matemáticas.

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Minicurso impartido como actividad formativa del máster y del doctorado en matemáticas.

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Título: COMPLEX HYPERBOLIC GEOMETRY

Abstract: The n–dimensional complex hyperbolic space CH^n consists of classes of negative vectors with respect to Hermitian form of signature (n,1) in C^{n+1}. There are two useful models in C^n: the ball model and the paraboloid model which are closely related to the ball and half–space models in the real case. In particular considerations, we restrict to one of the models and observe exapmles in (complex) dimension 2.

CH^n with the Hermitian form is an Hadamard manifold of strictly negative sectional curvature ranging from −1/4 (real directions) to −1 (complex directions) so it has visible ideal boundary. In the paraboloid model the ideal boundary has a structure of Heisenberg group.

In CH^n there are two types of totally geodesic submanifolds. One of them, a complex hyperbolic subspace, comes from intersection of CH^n by a complex linear subspace and is isometric to CH^k for k < n. The others are totally real hyperbolic subspaces coming from totally real linear subspaces. They are embedding of rescaled Hk’s. On the ideal boundary we observe chains being boundaries of complex hyperbolic subspaces.

In CH^n no totally geodesic hypersurface (of real codimension 1) exists although

bisectors (i.e. hypersurfaces equidistant from psir of points) have interesting properties. The isometry group PU(n,1) of CH^n consists of classes of matrices preserving the Hermitian form. We study them with connection to their boundary action.

As a final, we give distance formulae for geodesic, complex geodesics and hyperspaces. For it, we develop some numerical invariants of projective type. As an application we study that way geometry of bisectors in CH^n.

Fecha y lugar: 12, 13 y 14 de noviembre de 2018 de 10:00 a 12:00 horas en el seminario de la primera planta del IEMath-Gr

Ficheros Adjuntos

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