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Department of Mathematics
The Institute of Mathematical Sciences
The Chinese University of Hong Kong

數學系
數學科學研究所
香港中文大學

Phone: (852) 3943 7988 / 3943 7989 • Fax: (852) 2603 5154 • Email: dept@math.cuhk.edu.hk
Phone: (852) 3943 8036 / 3943 8038 • Fax: (852) 3942 1020 • Email: ims@ims.cuhk.edu.hk
Rm. 220, Lady Shaw Building, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong
Unit 601, Academic Building No. 1, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Joint Geometric Analysis Seminar

Pseudo-convex submanifolds — curvature properties, Plateau problem, and the discrete theory

Prof. Xiang Ma
Peking University

Abstract:
As a generalization of the usual convex hypersurfaces, we consider a spacelike submanifold immersed in a pseudo Euclidean space, whose normal bundle is induced with a Lorentz inner product of signature (1,p), and we make a convexity assumption on its second fundamental form. The simplest example is a closed curve in the 3-dimensional Lorentz space whose tangent and normal vectors span a spacelike plane, and it winds around some timelike axis with index 1. For such a pseudo-convex loop, we show that it satisfies a reversed Fenchel type inequality (its total curvature is no more than 2pi), and it always span a spacelike maximal surface. Then we give the general definition of a pseudo-convex submanifold and demonstrate their close relationship with convex hypersurfaces. If time is allowed we will briefly mention what is a pseudo-convex polyhedron and a discretized Positive Mass Conjecture about the Liu-Yau mass. This is a joint work with Dr. Nan Ye, and the final part is an ongoing project with my postdoc Dong Zhang.

Date:	1 February 2018 (Thursday)
Time:	10:30 a.m. – 11:30 a.m.
Venue:	Room 502A, Academic Building No.1 The Chinese University of Hong Kong, Shatin

All are Welcome!