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Joint Geometric Analysis Seminar

(Part of MIST program)

Non-positively curved Ricci surfaces with catenoidal ends

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Abstract

A Ricci surface is defined to be a Riemannian surface (M, g_M) whose Gauss curvature K satisfies the differential equation $K\Delta K + g_M(\nabla K, \nabla K) + 4K^3 = 0$. These surfaces were firstly studied by A. Moroianu and S. Moroianu. They have proved that the Gauss curvature does not change sign on a connected Ricci surface. Moreover, they also showed that every non-positively curved Ricci surface admits locally isometric minimal immersions into R^3 . From a famous theorem of Huber, we know that a complete non-positively curved surface with finite total curvature must be biholomorphic to a compact Riemann surface with a finite number of punctured points. This fact inspires us to define the catenoidal ends for complete non-positively curved Ricci surfaces. This talk is divided into two parts:

1. By using an analogue of the Weierstrass representation, we obtain some classification results for Ricci surfaces of genus zero with catenoidal ends.
2. With the help of a recent work of G. Mondello and D. Panov, we get an existence result for Ricci surfaces with positive genus and arbitrary number of catenoidal ends.

Date: February 3, 2023 (Friday)

Time: 3:00pm-4:00pm (Hong Kong time)

ZOOM link: <https://cuhk.zoom.us/j/91805734715>

All are Welcome