THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

The Sphere Covering Inequality and its applications

By

Prof. Changfeng Gui
University of Texas at San Antonio

Abstract

In this talk, I will introduce a new geometric inequality: the Sphere Covering Inequality. The inequality states that the total area of two distinct surfaces with Gaussian curvature less than 1, which are also conformal to the Euclidean unit disk with the same conformal factor on the boundary, must be at least 4π. In other words, the areas of these surfaces must cover the whole unit sphere after a proper rearrangement. We apply the Sphere Covering Inequality to show the best constant of a Moser-Trudinger type inequality conjectured by A. Chang and P. Yang. Other applications of this inequality include the classification of certain Onsager vortices on the sphere, the radially symmetry of solutions to Gaussian curvature equation on the plane, classification of solutions for mean field equations on flat tori and the standard sphere, etc. The resolution of several open problems in these areas will be presented.

Date   : **23 December, 2019 (Monday)**
Time   : **11:00am – 12:00pm**
Venue : **Room 3472, Academic Building (Lifts 25-26), HKUST**

All are Welcome!