



MATH-IMS Joint Pure Mathematics Colloquium Series The Chinese University of Hong Kong

This Colloquium Series in Pure Mathematics is organized by the Department of Mathematics and the Institute of Mathematical Sciences (IMS) at The Chinese University of Hong Kong. The series focuses on all areas of pure mathematics together with theoretical developments and applications.

Date: February 10, 2023 (Friday)

Time: 9:30AM-10:30AM (Hong Kong Time)

Zoom Link: <https://cuhk.zoom.us/j/98846779826>

Manifolds/Singular Spaces with Ricci Curvature Lower Bound

*Speaker: Professor Guofang Wei
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Abstract: It is of general interest to study the difference between Ricci and sectional curvature lower bound. A well-known difference is their control on Betti numbers. Joint with J. Pan, we constructed manifolds/singular spaces with nonnegative Ricci curvature which give negative answers to two long open questions. One is about the properness of Busemann functions, and the other one regards the singular set of Ricci limit sets. Building on these, joint with X. Dai, S. Honda, J. Pan, we discover two surprising types of Weyl's laws which are fractal-like for some compact singular space with "Ricci lower bound" (Ricci limit spaces). These show dramatic new features for Ricci lower bound.

Bio: Professor Wei obtained her PhD at State University of New York in Stony Brook under the supervision of Professor Detlef Gromoll. After being a Moore instructor at MIT and several postdoc positions at MSRI and UCLA, she joined the University of California Santa Barbara in 1992 and has been a full professor since 2002. Professor Wei's research interest broadly covers a variety of topics in differential geometry and geometric analysis, especially on the theory of comparison geometry, manifolds with weak curvature bounds, the eigenvalue of Laplacian, etc. Prof. Wei was awarded the Sloan Fellowship in 1988 and elected as a Fellow of the American Mathematical Society (AMS) in 2014, and she held the Eisenbud Professorship at MSRI in 2016. Prof. Wei also serves on the editorial board of several journals including Proceedings of the AMS, Annals of Global Analysis and Geometry, Journal of Topology and Analysis. She has also mentored a significant number of successful graduate students and postdocs.