香 港 大 學
THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

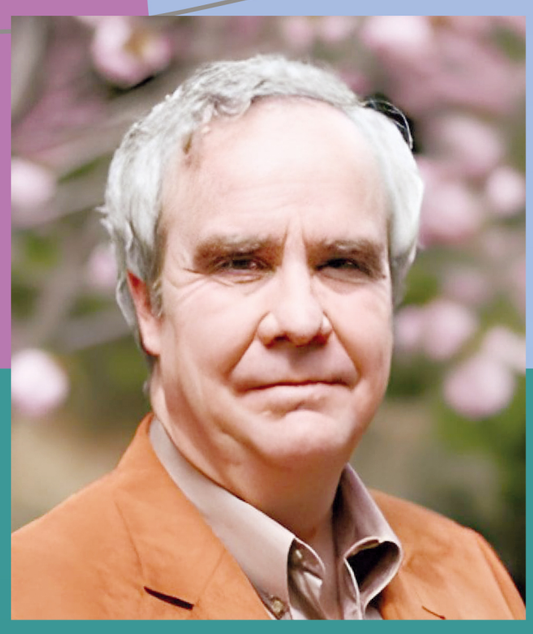
Frontiers of Mathematics Lecture

Curvature and harmonic analysis on compact manifolds

Abstract

We shall explore the role that curvature plays in harmonic analysis on compact manifolds. We shall focus on estimates that measure the concentration of eigenfunctions. Using them we are able to affirm the classical Bohr correspondence principle and obtain a new classification of compact space forms in terms of the growth rates of various norms of (approximate) eigenfunctions. This is joint work with Xiaoqi Huang following earlier work with Matthew Blair.

In joint work with Huang, Zhongkai Tao and Zhexing Zhang, we are able to extend these estimates to manifolds of bounded geometry and nonpositive curvature, allowing us to obtain new estimates on convex cocompact hyperbolic surfaces.



Professor Christopher D. Sogge
Johns Hopkins University, USA

Date :
October 7, 2026 (Wednesday)

Time :
5:00 – 6:00 pm

Venue :
Lecture Theatre C, LG1/F,
Chow Yei Ching Building, HKU

Biography

Professor Christopher Donald Sogge is the J. J. Sylvester Professor of Mathematics at Johns Hopkins University and the editor-in-chief of the American Journal of Mathematics. His research concerns Fourier Analysis and partial differential equations.

Sogge earned a doctorate in mathematics from Princeton University in 1985 under the supervision of Elias M. Stein. He taught at the University of Chicago from 1985 to 1989 and the University of California, Los Angeles from 1989 to 1996 before moving to Johns Hopkins. He received fellowships from the Guggenheim, Sloan and Simons Foundation and has given two invited addresses at International Congresses.

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