



PROF. U. B. TEWARI DISTINGUISHED LECTURE SERIES IN MATHEMATICS

Department of Mathematics, IIT Kanpur

HARMONIC ANALYSIS ON RIEMANNIAN MANIFOLDS

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Johns Hopkins University, USA

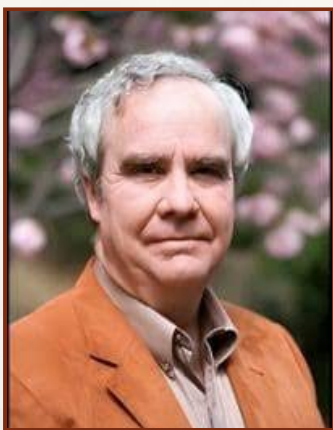
November 9-10-12-13, 2026, 3:30 p.m.

Venue: Lecture Hall Complex

ABSTRACT

We shall present several results concerning harmonic analysis on Riemannian manifolds. We start by motivating the results by going over their Euclidean analogs, including the Stein-Tomas restriction theorem and decoupling estimates. We also shall go over classical results, such as the sharp Weyl theorem and the Duistermaat-Guillemin theorem for compact Riemannian manifolds. After presenting this background, we shall go over more recent work. In particular, 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.

ABOUT THE SPEAKER



Prof. Christopher Donald Sogge is an eminent American mathematician specializing in Fourier analysis and partial differential equations. He is internationally renowned for his fundamental contributions to harmonic analysis and partial differential equations, particularly in the areas of oscillatory integrals, Fourier integral operators, spectral theory, and dispersive equations. He is the J. J. Sylvester Professor of Mathematics at Johns Hopkins University and Editor-in-chief of the American Journal of Mathematics. Prof. Sogge has received numerous honours, including the Presidential Young Investigator Award and the Diversity Recognition Award from Johns Hopkins University. He was an invited speaker at the 1994 ICM. In 2012, he became one of the inaugural Fellows of the American Mathematical Society. He has held fellowships from the National Science Foundation, the Alfred P. Sloan Foundation, and Guggenheim Foundation. He delivered a Laudatio at the 2026 International Congress of Mathematicians (ICM) in honour of a 2026 Fields Medalist. He is the author of several books and monographs, including *Fourier Integrals in Classical Analysis* and *Lectures on Nonlinear Wave Equations*.

ABOUT THE SERIES



The lecture series is in honour of Prof. U.B. Tewari (1944-2019) for his outstanding contributions in mathematics. This annual event is generously established by his family, friends, and former students. Each year, a distinguished mathematician is invited to deliver a comprehensive short course consisting of 4-5 lectures spread over a two-week period in a forefront area of Mathematics. This year's lecture is the fifth in the series, and it includes a short course designed to engage researchers and graduate students.



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