

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

*This MATH-IMS Joint 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 focus on all areas of pure mathematics together with theoretical developments and applications.*

**Date:** October 15, 2020 (Thursday)

**Time:** 10am – 11am (Hong Kong Time)

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

### Generic scarring for minimal hypersurfaces

*Speaker: Professor Xin Zhou*  
*Cornell University*

**Abstract:** In classical spectral theory, Equidistribution and Scarring concern the distribution of normalized energy measures for Laplacian eigenfunctions on closed manifolds. The Quantum Ergodicity asserts that in negative curvature a density one subsequence of Laplacian eigenfunctions has their normalized energy measures equidistributing, while Scarring means that some particular subsequence of normalized energy measures concentrate on proper subsets. In this talk, we will present a scarring phenomenon for minimal hypersurfaces for a generic set of smooth metrics. In particular, for generic metrics, to each stable hypersurface, there exists a sequence of minimal hypersurfaces, with area and Morse index both diverging to infinity, that accumulate along the stable hypersurface in a quantitative way. This is a joint work with Antoine Song.

**Bio:** Professor Xin Zhou obtained his B.S. in Physics and Mathematics at Tsinghua University in 2006 and his M.S. in Mathematics at Peking University. After that, he pursued his Ph.D. at Stanford University under the supervision of Prof. Richard Schoen. After graduating in 2013, he went to MIT as a CLE Moore Instructor from 2013 to 2016. From 2016, Prof. Zhou has become an assistant professor at University of California Santa Barbara. He was a member of the Institute for Advanced Study for the academic year 2018-19 and he is currently an associate professor at Cornell University. Prof. Zhou's research interests include geometric analysis, calculus of variations and general relativity. In particular, he has made fundamental contributions to the recent development of the min-max theory for minimal surfaces, including the resolution of Multiplicity One Conjecture. Prof. Zhou was awarded the Sloan Fellowship in 2019 for his work.