

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: March 11, 2022 (Friday)

Time: 10:00AM-11:00AM (Hong Kong Time)

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

Homotopical methods in Floer theory

*Speaker: Professor Mohammed Abouzaid
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Abstract: The free loop space of a symplectic manifold is equipped with a canonical (multivalued) functional, which assigns to a 1-parameter family of loops the area of the cylinder that they sweep. Floer's insight that one can assign a homology group to this context by an appropriate reformulation of Morse theory, which led to a revolution in symplectic topology. Applied to toy examples, Floer's homology groups agree with ordinary homology. I will discuss an extension of Floer's idea to generalized cohomology theories. This was first envisioned by Floer himself, but the area of symplectic topology has finally reached the stage where we have concrete applications, which I will describe.

Bio: Prof. Mohammed Abouzaid received his PhD degree from University of Chicago in 2007 under the supervision of Prof. Paul Seidel. After that he was a Clay Mathematics Institute Research Fellow at MIT from 2007 to 2012. He moved to Columbia University in 2012 where he is now a professor. He received the 2017 New Horizons in Mathematics Prize and was an invited speaker at the 2014 International Congress of Mathematicians.