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: November 5, 2020 (Thursday)
Time: 4pm – 5pm (Hong Kong Time)
Zoom Link: https://cuhk.zoom.us/j/98846779826

Irreducible SU(2)-representations of toroidal integral homology 3-spheres

Speaker: Professor Raphael Zentner
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Abstract: Somewhat an analogue of the L-space conjecture for Heegaard Floer homology is the following question: Does instanton Floer homology detect the 3-sphere among integral homology 3-spheres? The generators of the underlying instanton chain complex is given by irreducible SU(2)-representations of the fundamental group. Hence a weaker question than the above is whether all integral homology 3-spheres admit irreducible SU(2)-representations. It is conjectured that this holds, since it has been proved for large classes by various authors. We show that toroidal integral homology 3-spheres have irreducible SU(2)-representations. This is joint work with Tye Lidman and Juanita Pinzon Caicedo.

Bio: Dr. Zentner received his Ph.D. degree from University of Aix-Marseille in 2006 and obtained Habilitation in 2015. He is currently on a five-year Heisenberg fellowship from the Deutsche Forschungsgemeinschaft (DFG) based at the University of Regensberg. His research focusses mainly on gauge theory and low-dimensional topology.