

*Department of Mathematics,  
University of California San Diego*

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## **Department Colloquium**

# **Hana Jia Kong**

Institute for Advanced Study

### **Structures and computations in motivic homotopy theory**

#### **Abstract:**

For the past 90 years, a fundamental question in classical homotopy theory is to understand the stable homotopy groups of spheres. The most modern method to study these groups is to compare them with the "motivic stable homotopy groups of spheres". Motivic homotopy theory has its roots in algebraic geometry. As a result of the recent advances, there is a reintegration of algebraic topology and algebraic geometry, with close connections to equivariant homotopy theory and number theory.

In this talk, I will introduce the classical and motivic stable homotopy categories and the connections between the two. I will then talk about the rich properties and extra structures that are present in the motivic stable homotopy category. The presence of these extra structures gives new computational tools that dramatically improve our understanding of the classical stable homotopy groups. Moreover, the flow of information can be reversed as well, producing new results in motivic stable homotopy theory for general fields.

Alireza Salehi Golsefidy

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4:00 PM

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