



# Number Theory Seminar

## Sum product phenomenon and super approximation

**Dr. Xin Zhang**

Department of Mathematics  
The University of Hong Kong

### **Abstract**

The sum product phenomenon in arithmetic combinatorics, roughly speaking, says that a general subset of a ring does not simultaneously contain a good additive structure and a good multiplicative structure. In this talk, I will discuss the proof of a conjecture of Salehi-Golsefidy on the sum product phenomenon over the rings of algebraic integers. I will then explain how this conjecture can have application to the super approximation conjecture, which concerns the spectral gap properties of certain discrete subgroups of linear algebraic groups. This is joint work with Tang Jincheng.

Date:	December 9, 2022 (Friday)
Time:	3:30 - 4:30pm
Venue:	Room 210, Run Run Shaw Bldg., HKU

*All are welcome*