



## **Department of Applied Mathematics Seminar**

# **Professor Jizu HUANG**

**Chinese Academy of Sciences, China** 

### **Topic**

Low rank tensor decompositions and its applications in partial differential equations

### **Date**| Time

24 March 2025 (Monday) | 14:00 – 15:00 (HK Time)

### Venue

TU817

#### **Abstract:**

In this talk, we begin with a brief review of low-rank tensor decompositions, including CP decomposition, Tucker decomposition, tensor train (TT) decomposition, and others. Our primary focus will be on the advantages and limitations of TT decomposition. Next, we present applications of TT decomposition in solving high wave number Helmholtz equations, Allen-Cahn equations, and Boltzmann-BGK equations. Numerical simulations demonstrate that TT decomposition offers significant advantages over traditional matrix-vector methods in solving these equations. Finally, we introduce the functional tensor format and discuss its applications in computing high-order Taylor expansions of vector functions constrained by ODEs.

#### **ALL ARE WELCOME**