



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

**Emergent feature selectivity from
random networks in rodent visual cortex**

By

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Abstract

The connectivity principles underlying the emergence of orientation selectivity in primary visual cortex (V1) of mammals lacking an orientation map (such as rodents and lagomorphs) are poorly understood. We present a theory in which random connectivity gives rise to orientation and direction selectivity that matches experimental observations. The theory predicts that mouse V1 neurons should exhibit intricate receptive fields in the two-dimensional frequency domain, causing a shift in orientation preferences with spatial frequency. We find evidence for these features in mouse V1 using calcium imaging and intracellular whole-cell recording.

Date : 8 March 2024 (Friday)

Time : 1:30pm - 2:30pm

Venue : Room 4475 (Lifts 25/26)

All are Welcome!