



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of Mathematics**

***MATHEMATICS COLLOQUIUM***

**GUE fluctuations in directed ballistic deposition**

By

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Abstract

Ballistic deposition is a model of interface growth introduced by Vold in 1959, which has remained largely mathematically intractable. In particular it is a challenge to prove or disprove that ballistic deposition is in the KPZ universality class. In this talk we will explain the meaning of KPZ universality and we will discuss several interface models which are expected to fall in it. We will also introduce the directed ballistic deposition model, which is a variation of ballistic deposition, where vertically falling blocks can only stick to the top or the upper right corner of growing columns. We will establish a version of strong KPZ universality, proving that the fluctuations of the height function at points near the origin are given by the Tracy-Widom GUE distribution. The proof is based on a graphical construction of the process in terms of a Last Passage Percolation. This is a joint work with Pablo Groisman, Santiago Saglietti and Sebastián Zaninovich.

**Date : 21 March 2025 (Friday)**

**Time : 3:00p.m.-4:00p.m.**

**Venue : Lecture Theatre F (Lift 25/26)**

*All Are Welcome!*