



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

The trigonometric-type three-field Blazsak-Marciniak lattice equation

By

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Abstract

In this talk, we propose a novel variant three-field Blazsak-Marciniak (BM) lattice equation by introducing trigonometric-type bilinear operators and leveraging the reduction technique from the variant KP-Toda hierarchy. Applying Hirota's bilinear method, we derive general Gram-type determinant solutions. Rational solutions of the variant BM lattice are obtained via Bäcklund transformation and differential operator method. Higher-order rogue waves are formulated in terms of Schur polynomials, whose peak patterns are linked to the root structures of Yablonskii-Vorob'ev polynomials and Umemura polynomials. Furthermore, three distinct types of breather solutions are identified, and numerical three-periodic wave solutions are computed using the Gauss-Newton method.

Date : 10 June 2026 (Wednesday)

Time : 4:00p.m.-5:00p.m.

Venue : Room 4503 (Lift 25 & 26)

All are Welcome!