THE UNIVERSITY   **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Geometry Seminar

Tropical Nevanlinna theory and ultradiscrete equations

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Abstract

In this talk we consider a max-plus semi-ring structure in the real line, $-\infty$ included, endowed with tropical addition, equivalent to the usual maximum operation, and tropical multiplication, equivalent to the usual addition. Tropical Nevanlinna theory describes value distribution of continuous piecewise linear functions (called tropical meromorphic functions) of a real variable, whose one-sided derivatives are integers at every point. This variant of Nevanlinna theory is due to Halburd and Southall, to be shortly described in the first part of this talk. We also shortly describe generalizations where the one-sided derivatives may be non-integers.

In the second part of the talk, we describe tropical counterparts of certain classical results from Nevanlinna theory such as the lemma of logarithmic derivative, the Clunie lemma and the Valiron-Mohon'ko lemma. This part is a joint work with C.C. Yang.

In the last part of the talk (joint with K. Tohge), we consider piecewise linear solutions of certain ultra-discrete equations, as an application of the preceding theory.

Date:	**April 22, 2009 (Wednesday)**
Time:	**3:00 – 4:00pm**
Place:	**Room 517, Meng Wah Complex, HKU**

All are welcome