

COLLOQUIUM

University of Notre Dame
Department of Mathematics

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Will give a lecture entitled

Discrete integrable dynamics and Somos sequences

On

Thursday, March 31, 2011

at 4:15 PM in Room 129 Hayes-Healy Hall

Abstract:

Somos sequences are generated by a rational recurrence, which is specified by a quadratic relation between adjacent iterates. Michael Somos noticed that, for some special choices of initial values, such recurrences could unexpectedly produce sequences of integers. Examples of Somos sequences were known somewhat earlier in number theory, from Morgan Ward's elliptic analogues of Fibonacci and Lucas sequences. In algebraic combinatorics, Somos recurrences provide a basic example of the Laurent phenomenon, which is a cornerstone of Fomin and Zelevinsky's theory of cluster algebras. This introductory talk reviews the history of Somos sequences and describes some of their connections with these and other areas of mathematics and theoretical physics, including solvable statistical mechanics and discrete integrable systems (QRT maps and the discrete Hirota equation).