

Integrable System Seminar

One- and Two-dimensional Toda Lattices and Their Applications: Part I

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Abstract

A review of one-, and two-dimensional Toda lattices will be presented. We will start with a physical setting of classical one-dimensional Toda-lattice, then extend to two-dimensional case. The bilinear equations, and N -soliton solutions in the form of Casorati determinants, will be presented for both the 1D and 2D Toda lattices. Then, we will show that these bilinear equations are nothing but the Plücker relations for N -soliton solutions. In the same spirit, the integrable semi-, and fully-discretizations of 2D Toda lattices, and their N -soliton solutions will be given. If time permits, we will show how the Sine-Gordon equation and its various types of solutions (kink, antikink, and breather) can be derived from 2D Toda equation and its N -soliton solution.

Date: **Monday, October 26, 2009**

Time: 3:00pm–4:00pm

Place: MAGC 1.410

For further information or for special accommodations, please contact Dr. Virgil Pierce via email at piercevu@utpa.edu.