

Generalized Volterra lattices in bidifferential calculus: Binary Darboux transformations and self-consistent sources

Folkert Mueller-Hoissen

Max Planck Institute for Dynamics and Self-Organization
Am Fassberg, Goettingen
Germany

Joint work with: Oleksandr Chvartatskyi, Aristophanes Dimakis, Kouichi Toda

We study two families of (matrix versions of) generalized Volterra (or Bogoyavlensky) lattice equations. For each family, the equations arise as reductions of a partial differential-difference equation in one continuous and two discrete variables, which is a realization of a general integrable equation in bidifferential calculus. This allows to derive a binary Darboux transformation and also self-consistent source extensions via general results of bidifferential calculus. Exact solutions are constructed from the simplest seed solutions.