Nonlocal symmetries, conservation laws, and recursion operators of the Veronese web equation

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Abstract

We study the Veronese web equation $u_y u_{tx} + \lambda u_x u_{ty} - (\lambda + 1)u_t u_{xy} = 0$ and using its isospectral Lax pair construct two infinite series of nonlocal conservation laws. In the infinite differential coverings associated to these series, we describe the Lie algebras of the corresponding nonlocal symmetries. Finally, we construct a recursion operator and explore its action on nonlocal shadows. The operator provides a new shadow which serves as a master-symmetry.

This is the joint work with Iosif S. Krasil'shchik and Oleg I. Morozov.