

Simple Lax description of the ILW hierarchy.

Buryak A.Yu.

The Intermediate Long Wave (ILW) equation describes the propagation of waves in a two-layer fluid of finite depth. Recently, it also appeared in the computation of certain intersection numbers on the moduli space of Riemann surfaces. The ILW equation possesses an infinite number of infinitesimal symmetries which form the so-called ILW hierarchy. A Lax representation of the ILW equation already appeared in the literature before, however, an explicit relation between the Lax representation of the ILW equation, its higher flows and the Hamiltonian structure was never clarified.

In the talk, using the notion of the logarithm of a pseudo-difference operator, I will present an explicit description of the whole ILW hierarchy together with its Hamiltonian structure in terms of a single Lax difference-differential operator.

The talk is based on a joined work with Paolo Rossi.