

Title: On the separation of variables for the two-dimensional integrable system with velocity-dependent potential

Short Abstract (max half page, coding special characters with \TeX):

We are working within a scope of applying transformations of bi-Hamiltonian structure to classify known integrable systems and find new ones. In the earlier work, the equations analogous to Bäcklund transformations were shown to be connected with the form of Lax matrix and can be explicitly derived from it. An algorithmic construction of the auto Bäcklund transformations of Hamilton-Jacobi equations is discussed and possible applications of this algorithm to finding new integrable system with integrals of motion of higher order in momenta are presented.