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Roman Smirnov* (smirnov@mathstat.dal.ca), Department of Mathematics and Statistics, Dalhousie University, Halifax, NS B3H 3J5, Canada. *Hamilton-Jacobi theory in Minkowski space via Cartan geometry.*

A complete solution to the problem of orthogonal separation of variables of the Hamilton-Jacobi equation in three-dimensional Minkowski space is obtained. The solution is based on the underlying ideas of Cartan geometry and ultimately developed into a general new algorithm that can be employed in the study of Hamiltonian systems defined by natural Hamiltonians within the framework of Hamilton-Jacobi theory. To demonstrate its effectiveness, we investigate, from this viewpoint, the Morosi-Tondo integrable system derived as a stationary reduction of the seventh-order Korteweg-de Vries flow to show explicitly that the system in question is an orthogonally separable Hamiltonian system. The latter result is a new characterization of the Morosi-Tondo system. This is joint work with Joshua Horwood and Raymond McLenaghan (Received February 10, 2009)