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The Two-Component Camassa-Holm Equations CH(2,1) and CH(2,2): First-Order Integrating Factors and Conservation Laws

Marianna Euler, Norbert Euler

(Submitted on 17 Apr 2012)

Recently, Holm and Ivanov, proposed and studied a class of multi-component generalisations of the Camassa-Holm equations [D D Holm and R I Ivanov, Multi-component generalizations of the CH equation: geometrical aspects, peakons and numerical examples, {\it J. Phys A: Math. Theor} {\bf 43}, 492001 (20pp), 2010]. We consider two of those systems, denoted by Holm and Ivanov by CH(2,1) and CH(2,2), and report a class of integrating factors and its corresponding conservation laws for these two systems. In particular, we obtain the complete sent of first-order integrating factors for the systems in Cauchy-Kovalevskaya form and evaluate the corresponding sets of conservation laws for CH(2,1) and CH(2,2).

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