Mathematical Physics

Conservation laws and normal forms of evolution equations

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We study local conservation laws for evolution equations in two independent variables. In particular, we present normal forms for the equations admitting one or two low-order conservation laws. Examples include Harry Dym equation, Korteweg-de-Vries-type equations, and Schwarzian KdV equation. It is also shown that for linear evolution equations all their conservation laws are (modulo trivial conserved vectors) at most quadratic in the dependent variable and its derivatives.

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