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The periodic two-dimensional μ-b-equation as an EPDiff equation

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We introduce a periodic two-dimensional μ-b-equation and a periodic two-dimensional two-component (μ)-Camassa-Holm equation which we study as geodesic flows on the diffeomorphism group of the torus and a semidirect product respectively. The paper explains the derivation of these equations within V.I. Arnold's (1966) general framework, some analogies to recently discussed related equations and gives a self-contained presentation of the geometric aspects. As an application, we obtain well-posedness results and some explicit curvature computations.

Submission history

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