

On General Volume-Preserving Mechanical Systems via Cohomology

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Abstract: We present the general form of equations that generate a volume-preserving flow on a symplectic manifold (M, ω) via the highest Euler-Lagrange cohomology. It is shown that for every volume-preserving flow there are some 2-forms that play a similar role to the Hamiltonian in the Hamilton mechanics and the ordinary canonical equations with Hamiltonian H are included as a special case with a 2-form $H\omega/(n-1)$.

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