

## Variational analysis of a reduced Allen–Cahn action functional

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We consider the sharp interface limit of the Allen–Cahn action functional. For suitable evolutions of (generalized) hypersurfaces this functional consists of the sum of the squares of the mean curvature and of the velocity vectors, integrated over time and space. Given initial and final conditions we investigate the corresponding action minimization problem. We propose a generalized formulation, prove compactness and lower-semicontinuity properties and characterize the Euler–Lagrange and conserved quantities.