

Abstract Submitted
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Construction of initial vortex-surface fields and Clebsch potentials for flows with high-symmetry using first integrals PENGYU HE, YUE YANG, Peking University — We develop a systematic methodology to construct the explicit, general form of vortex-surface fields (Yang and Pullin, *J. Fluid Mech.*, 661, 2010) and Clebsch potentials based on first integrals of the characteristic equation of a given three-dimensional velocity-vorticity field. This methodology is successfully applied to the initial fields with the zero helicity density and high symmetry, e.g., initial fields with the Taylor-Green and the Kida-Pelz symmetries.

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