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Bifurcation of Vortex Density Current in Trapped Bose Condensates

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Abstract: Vortex density current in the Gross-Pitaevskii theory is studied. It is shown that the inner structure of the topological vortices can be classified by Brouwer degrees and Hopf indices of Φ-mapping. The dynamical equations of vortex density current have been given. The bifurcation behavior at the critical points of the current is discussed in detail.

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Key words: vortex current, bifurcation

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