

Structures of Equatorial Envelope Rossby Wave Under a Generalized External Forcing

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Abstract: The cubic nonlinear Schrodinger (NLS for short) equation with a generalized external heating source is derived for large amplitude equatorial envelope Rossby wave in a shear flow. And then various periodic structures for these equatorial envelope Rossby waves are obtained with the help of a new transformation, Jacobi elliptic functions, and elliptic equation. It is shown that different types of resonant phase-locked diabatic heating play different roles in structures of equatorial envelope Rossby wave.

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Key words: NLS, periodic structure, diabatic heating, Jacobi elliptic function

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