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Non-modal analysis of the diocotron instability. Plane geometry

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(Submitted on 11 May 2012)

The comprehensive investigation of the temporal evolution of the diocotron instability of the plane electron strip on the linear stage of its development is performed. By using the Kelvin's method of the shearing modes we elucidate the role of the initial perturbations of the electron density, which is connected with problem of the continuous spectrum. The linear non-modal evolution process, detected by the solution of the initial value problem, leads towards convergence to the phase-locking configuration of the mutually growing normal modes.

Comments: 15 pages, 3 figures
Subjects: **Plasma Physics (physics.plasm-ph)**
Cite as: **arXiv:1205.2666 [physics.plasm-ph]**
(or **arXiv:1205.2666v1 [physics.plasm-ph]** for this version)

Submission history

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[v1] Fri, 11 May 2012 18:57:29 GMT (244kb)

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