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Stability of relativistic magnetized jets

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Astrophysical jets are collimated outflows extending in length several times their radii. Even though current – driven and Kelvin – Helmholtz instabilities form along the flow, jets are observed to retain their shape almost intact. The jet dynamics are described by the ideal MHD equations and the stability is studied through a linear analysis, i.e., we introduce perturbations of the physical quantities to the MHD equations. We proceed with the numerical integration of the perturbed system, producing solutions which provide the characteristic growth rates of the perturbations. Finally, we will elaborate on the results and outline the main conclusions focusing on their dependence on the bulk Lorentz factor and the current distribution.

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