LINEAR STABILITY OF ACCRETION FLOW ONTO NEUTRON STAR TO NONSPHERICAL PERTURBATION

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We investigate the stability to the radiation hydrodynamic perturbations of spherical accretion flow onto a neutron star with accretion luminosity close to the Eddington limit. Linear spherical and nonspherical global modes were searched in fully general relativistic formalism. All oscillatory modes were found to be weakly damped. However, we also find some aspherical nonoscillatory modes growing. These unstable aspherical modes resemble the convection and are relevant to the radiation hydrodynamic QPO models of Galactic X-ray sources.

STREAM COLLISION HYDRODYNAMICS WITH RADIATIVE COOLING: 3-D GRAPHICS & ANIMATIONS

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We have performed the simulations of supersonic collisional between two gas streams resulted from the disruption of a normal star by super massive black hole's tidal force with a three-dimensional hydronamics code based on the total variation diminishing (TVD) scheme. A simple treatment for radiative colling is included for both optically thick and thin regions. The effects of thermalization and radiative cooling are discussed. A few short animations and 3-D graphics made from the simulation results are also presented.