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Nonlinear evolution of the vertical shear instability in accretion discs

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Accretion discs with radial temperature gradients have angular velocity profiles that vary both with radius and height. The presence of vertical shear can lead to a hydrodynamic instability (the vertical shear instability - VSI) that is essentially a manifestation of the Goldreich-Schubert-Fricke instability in the disc context. In this talk I will present the results from a recent study in which the nonlinear saturated state of this instability has been examined. The issues that I will discuss include the formation and life times of vortices, the magnitudes of the resulting transport coefficients, the relation between the VSI, the subcritical baroclinic instability and the convective overstability, and prospects for the instability operating in realistic models of protoplanetary discs that include stellar irradiation and internal heat transport.

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