Cosmic emergence of galactic discs: order from chaos

A precise modelling of galaxies' morphological diversity along cosmic time is essential to accurately constrain our cosmologic model. While resilience of thin galactic discs is an enigma within the hierarchical scenario, it now appears that their self-regulation through dissipation is essential to explain their survival. Their initial morphology is determined by the acquisition of an angular momentum, coming from larger scales, which are less dense, thus more stable. This cosmic accretion creates a reservoir of free energy in the circum-galactic environment, from which discs spontaneously build a control loop through tidal effects which maintain them close to their marginal stability. Thin galactic discs are thus emergent structures, maintained through critical self-organization.