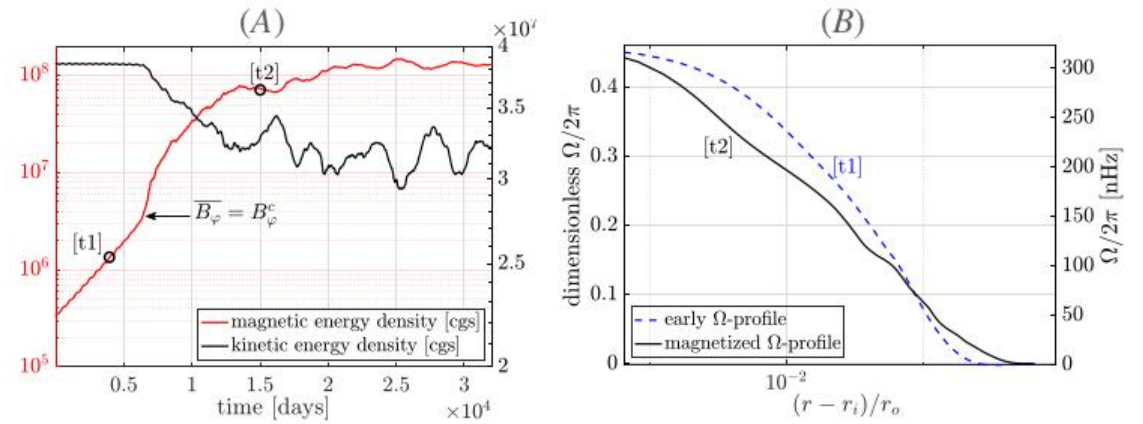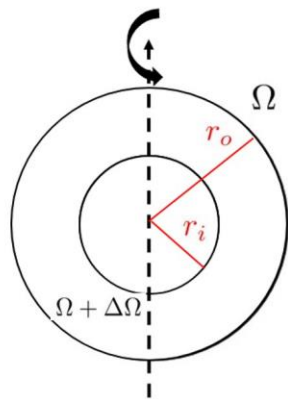# Why do stars rotate so slowly?

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RNL 2022
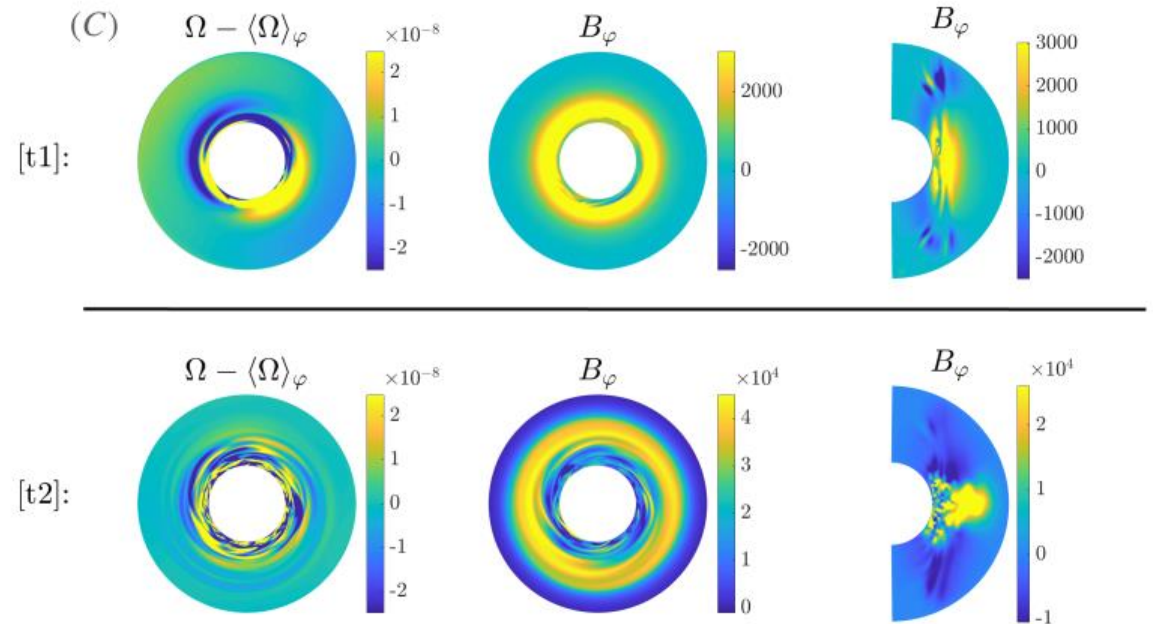
Top: Timeseries of the total kinetic and magnetic energies (A), and radial profiles of the azimuthally-averaged angular velocity Ω in the equatorial plane (B) for two distinct times, marked as [t1] and [t2] in the timeseries. Bottom (C): Snapshots of the non-axisymmetric angular velocity in the equatorial plane (left), and of the azimuthal magnetic field both in equatorial (middle) and meridional planes (right) (colorbars in cgs units).

A subcritical transition to turbulence
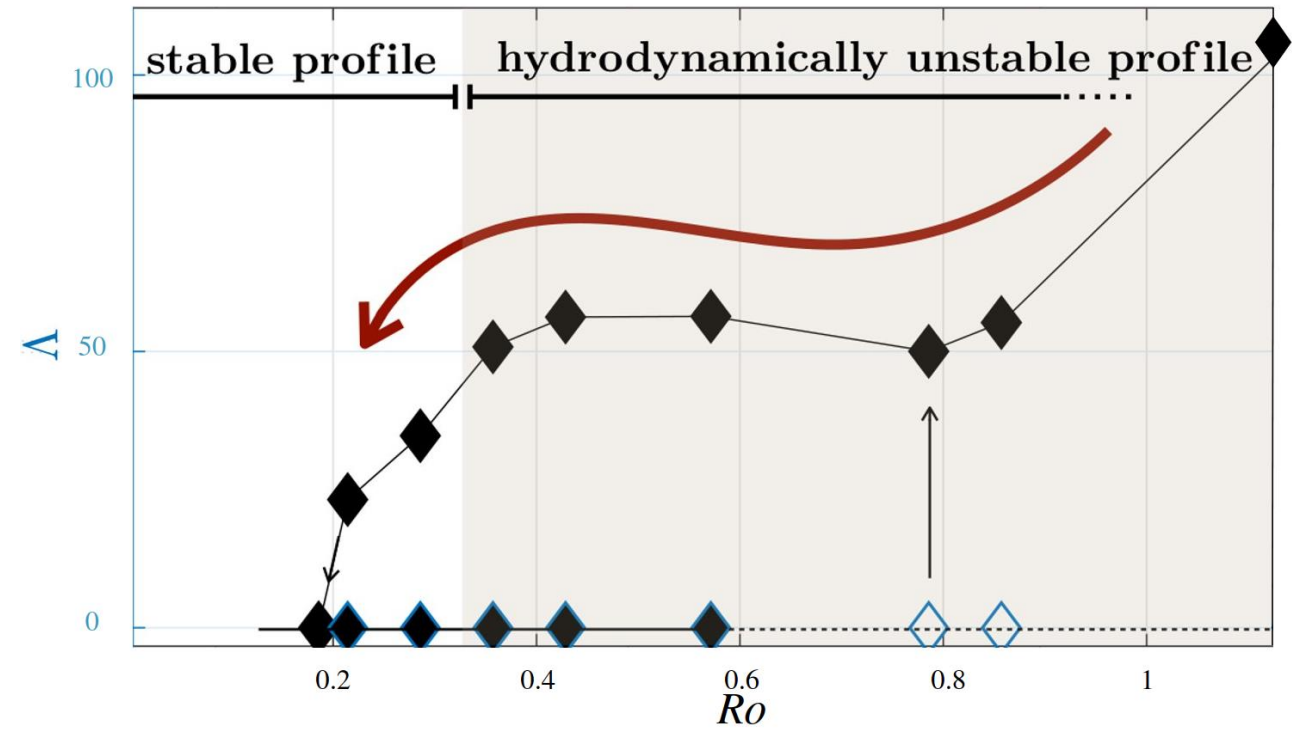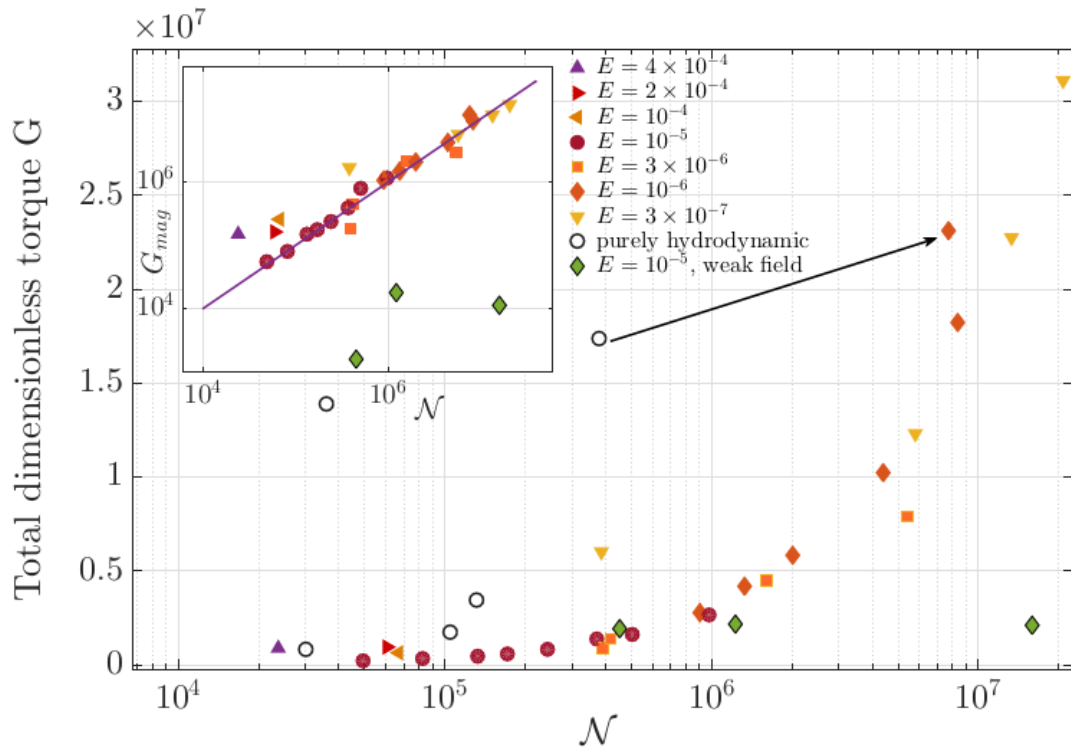
Time-averaged magnetic energy density of the saturated dynamo versus shear rate (Rossby number Ro), for E = 10⁻⁵, N/Ω = 1.24, Pr = 0.1 and Pm = 1.

Total dimensionless torque G exerted on the inner sphere as a function of Spruit's dimensionless quantity N. *Inset:* Magnetic torque only, shown here for a wide range of parameters values and compared to Spruit's theoretical prediction. The arrow compares two simulations with identical control parameters, with and without magnetic fields.