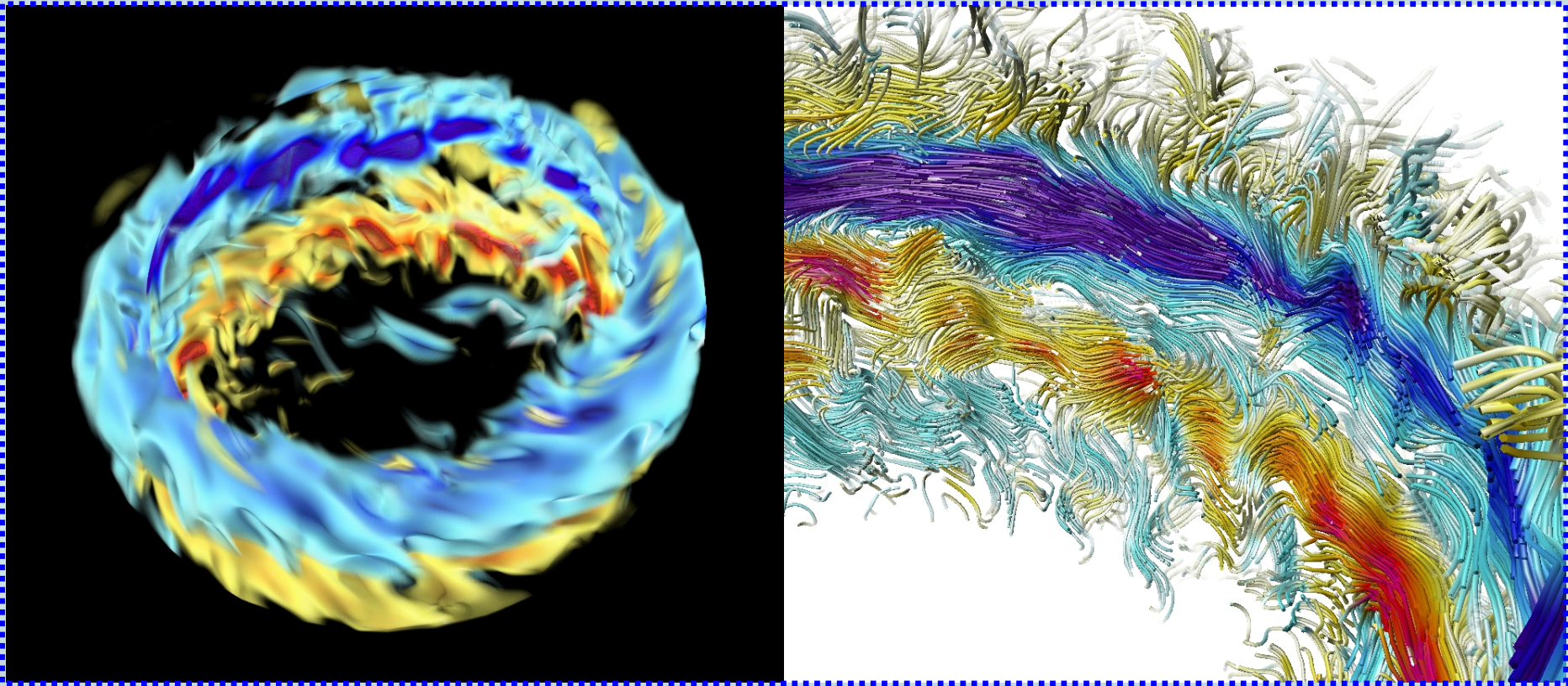


Global-scale Dynamos in Rapidly Rotating Suns



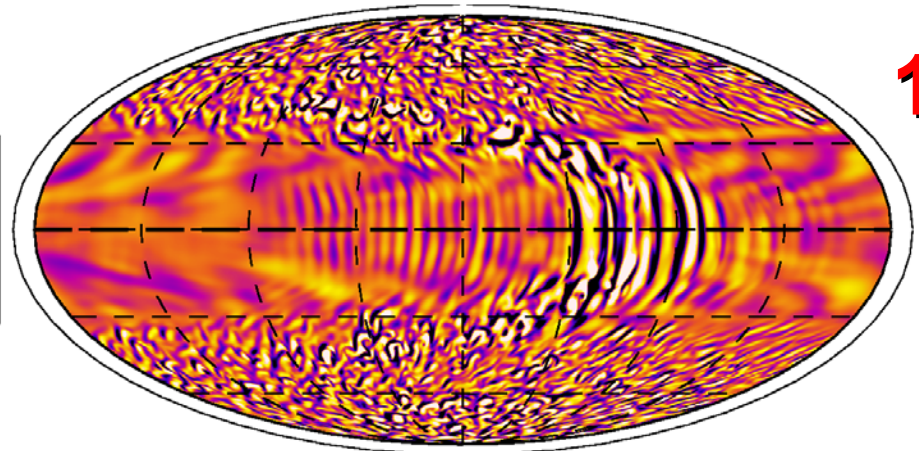
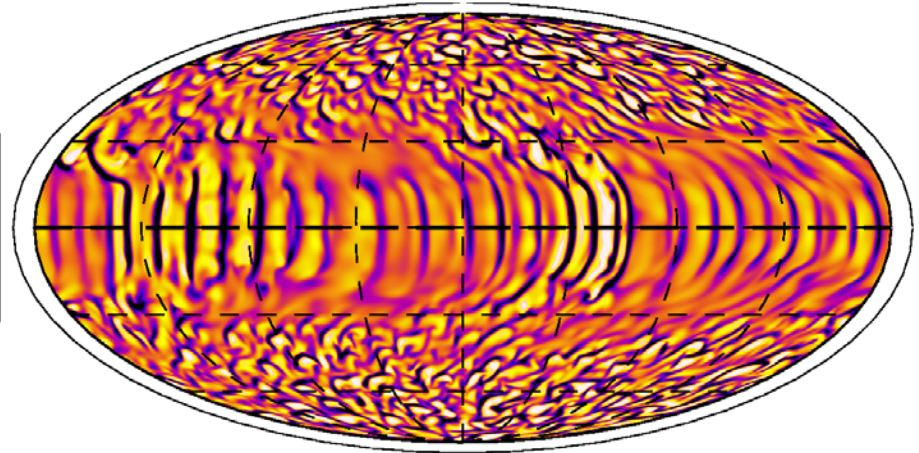
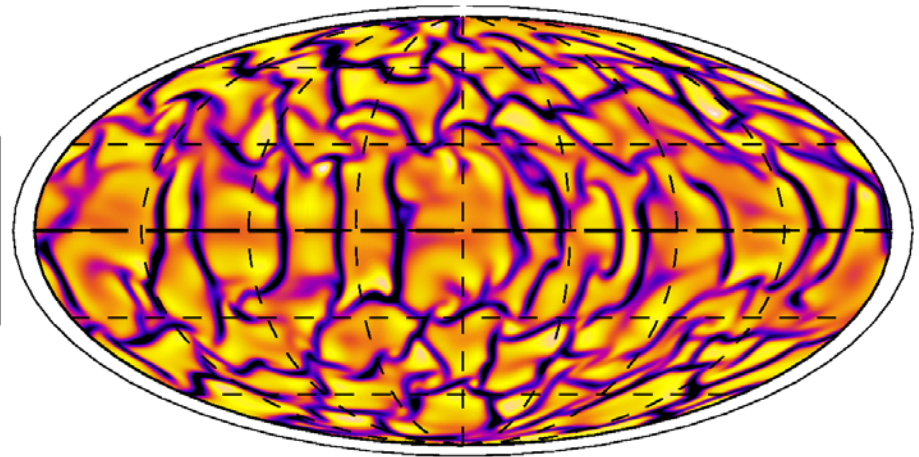
Benjamin Brown

KITP, June 2008

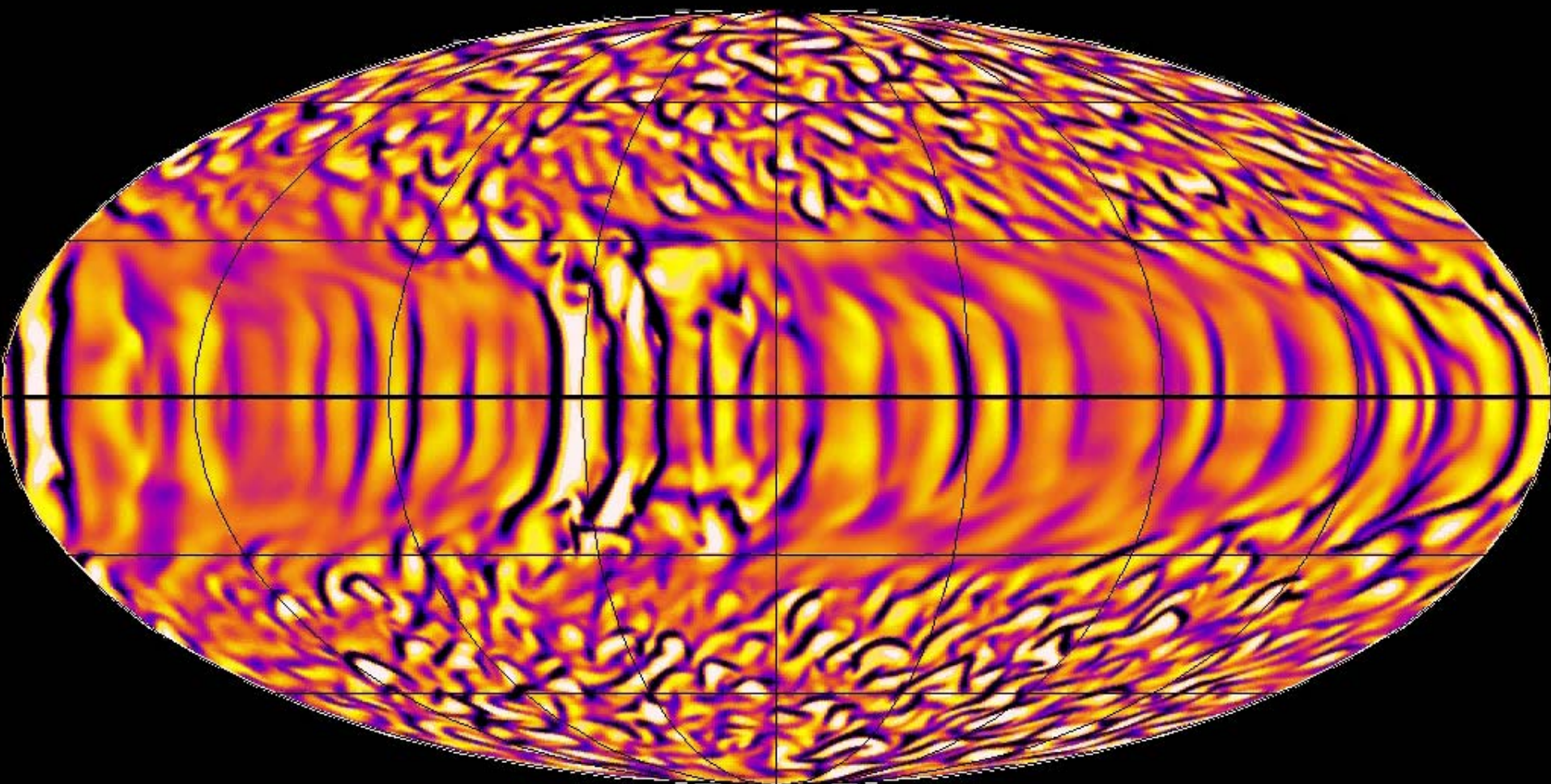
*with Mark Miesch, Matt Browning,
Nick Nelson, Sacha Brun, & Juri Toomre*

Younger Suns

*Active Nests
of Localized
Convection
arise with
rapid rotation*



Top convection zone



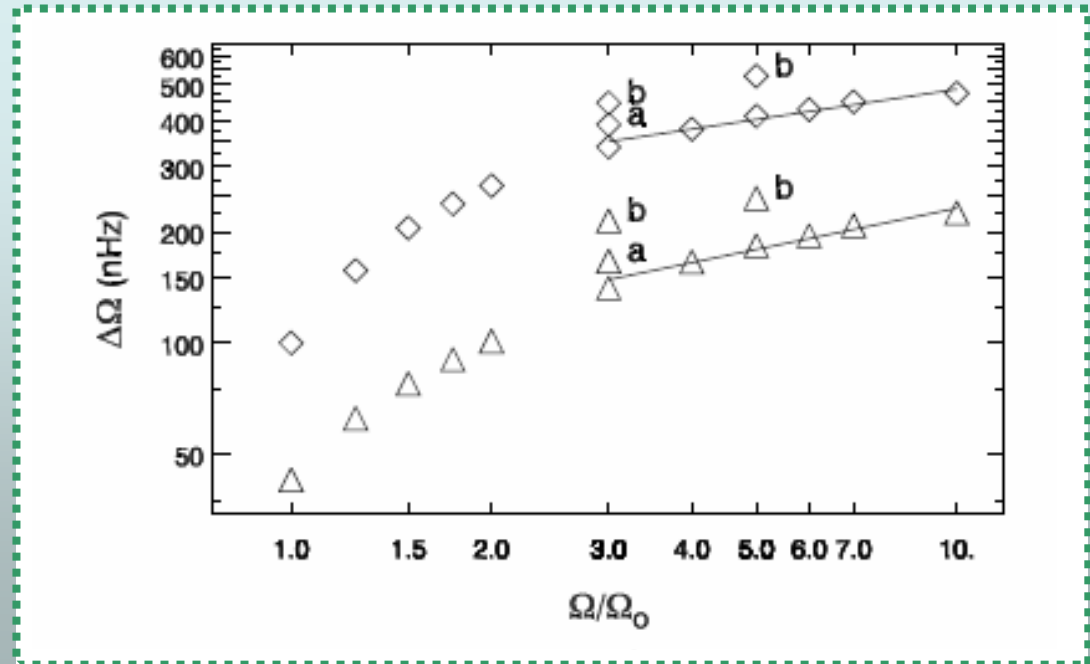
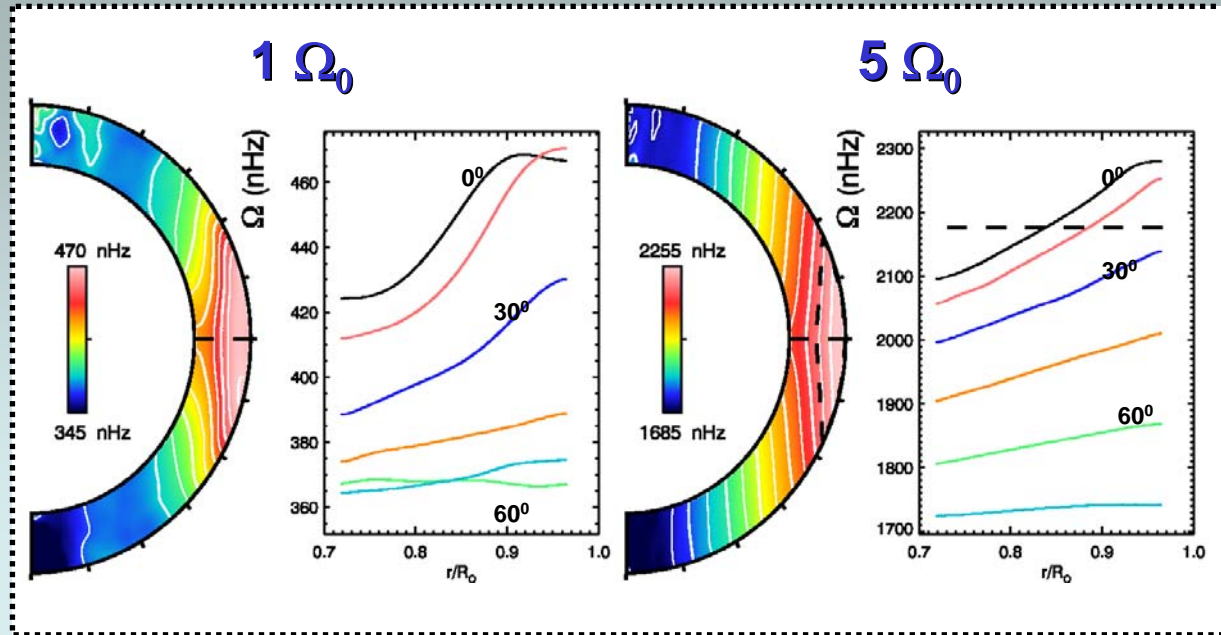
-70 m/s  70 m/s

V_r at $5.0 \Omega_0$

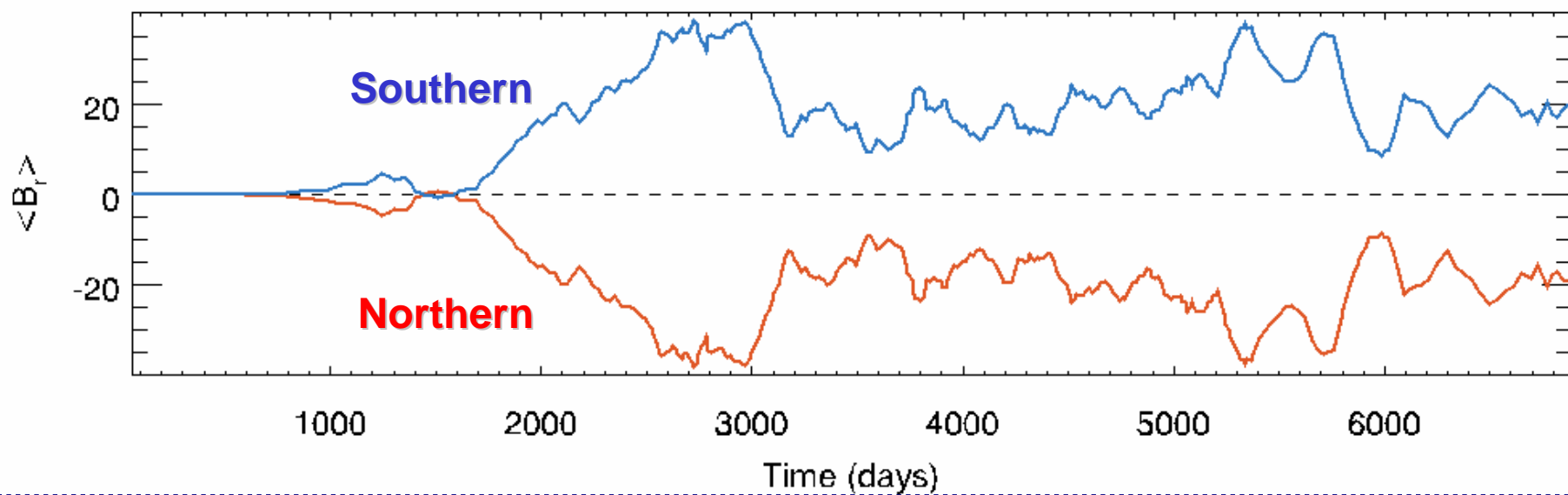
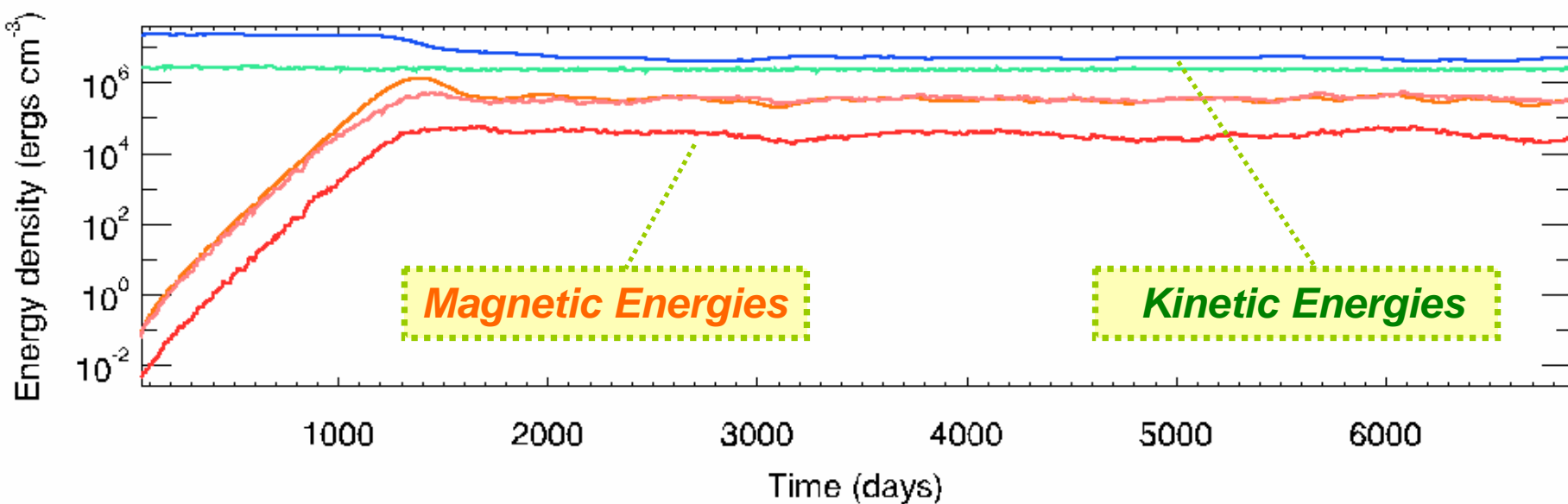
0 days

Differential Rotation

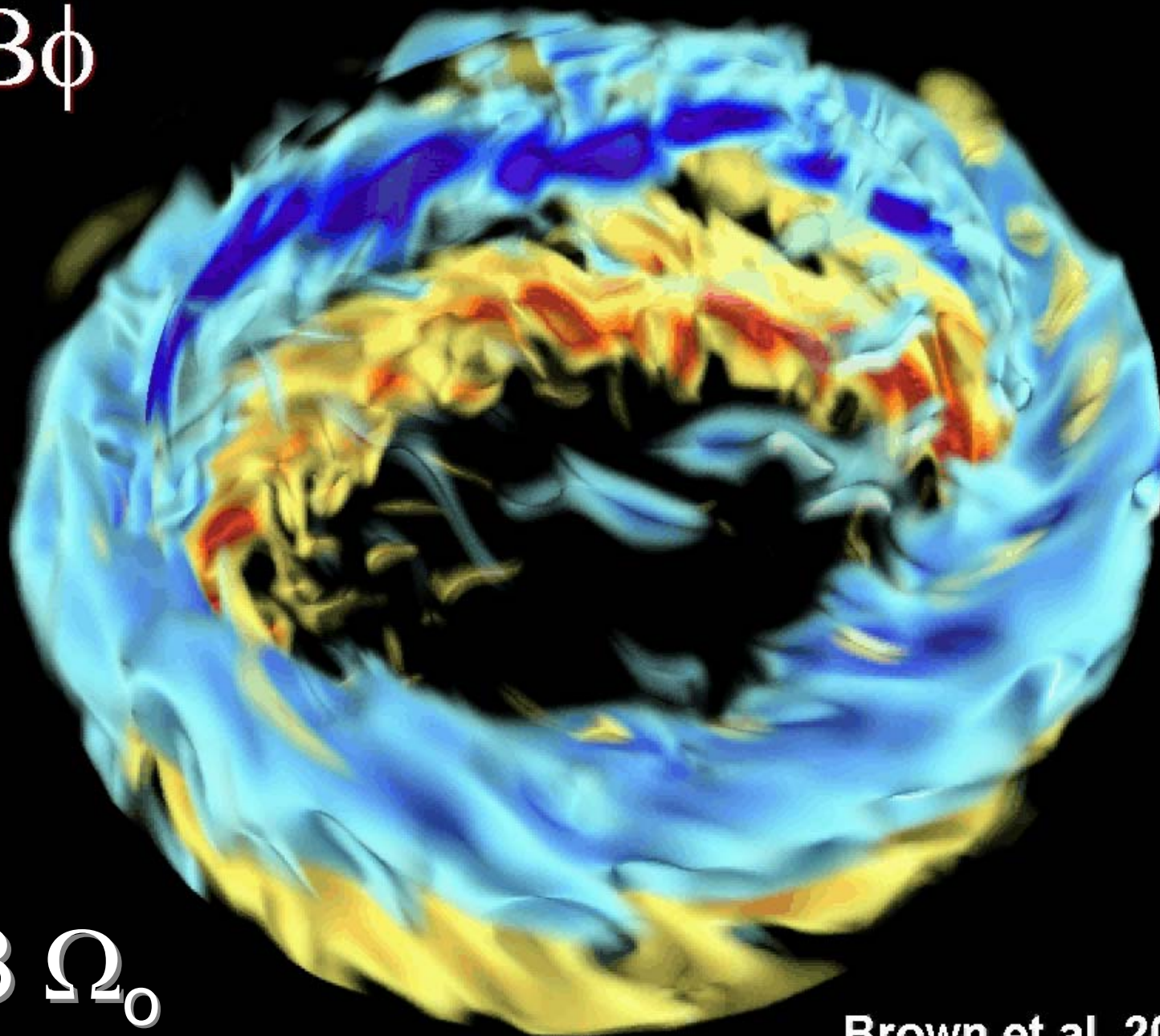
More rapidly rotating suns look much like our star, but with stronger overall DR contrast



The Dynamo story at $3 \Omega_0$



$B\phi$



$3\Omega_0$

Brown et al. 2007

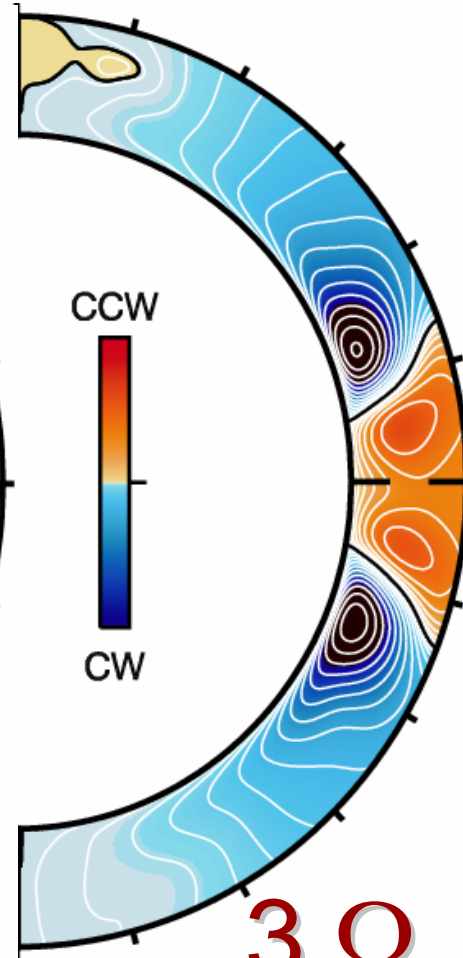
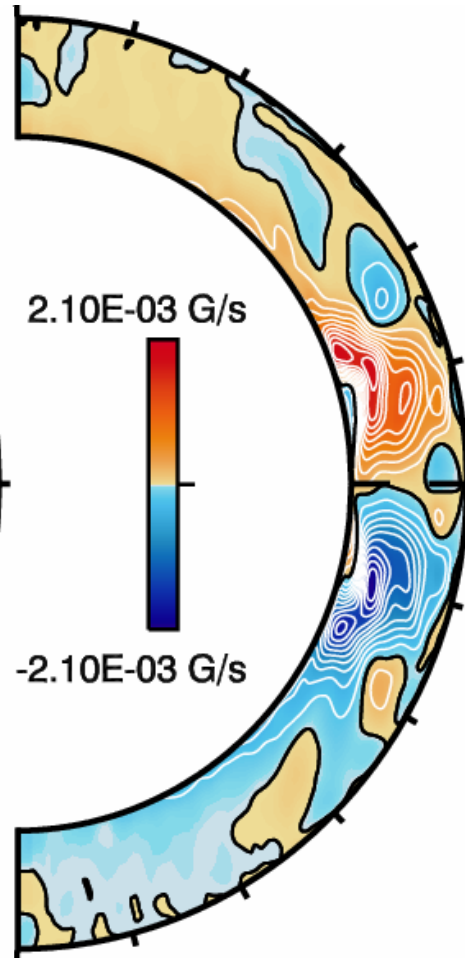
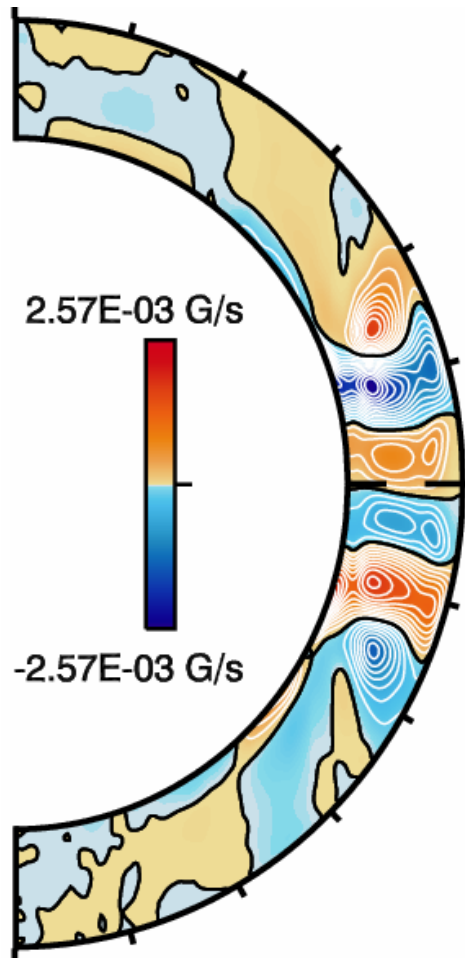
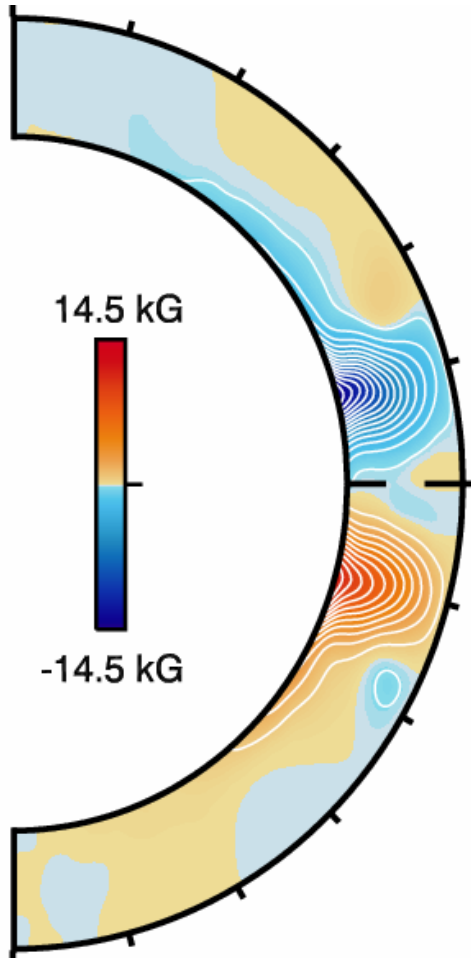
Averaged Dynamo Terms

B_ϕ

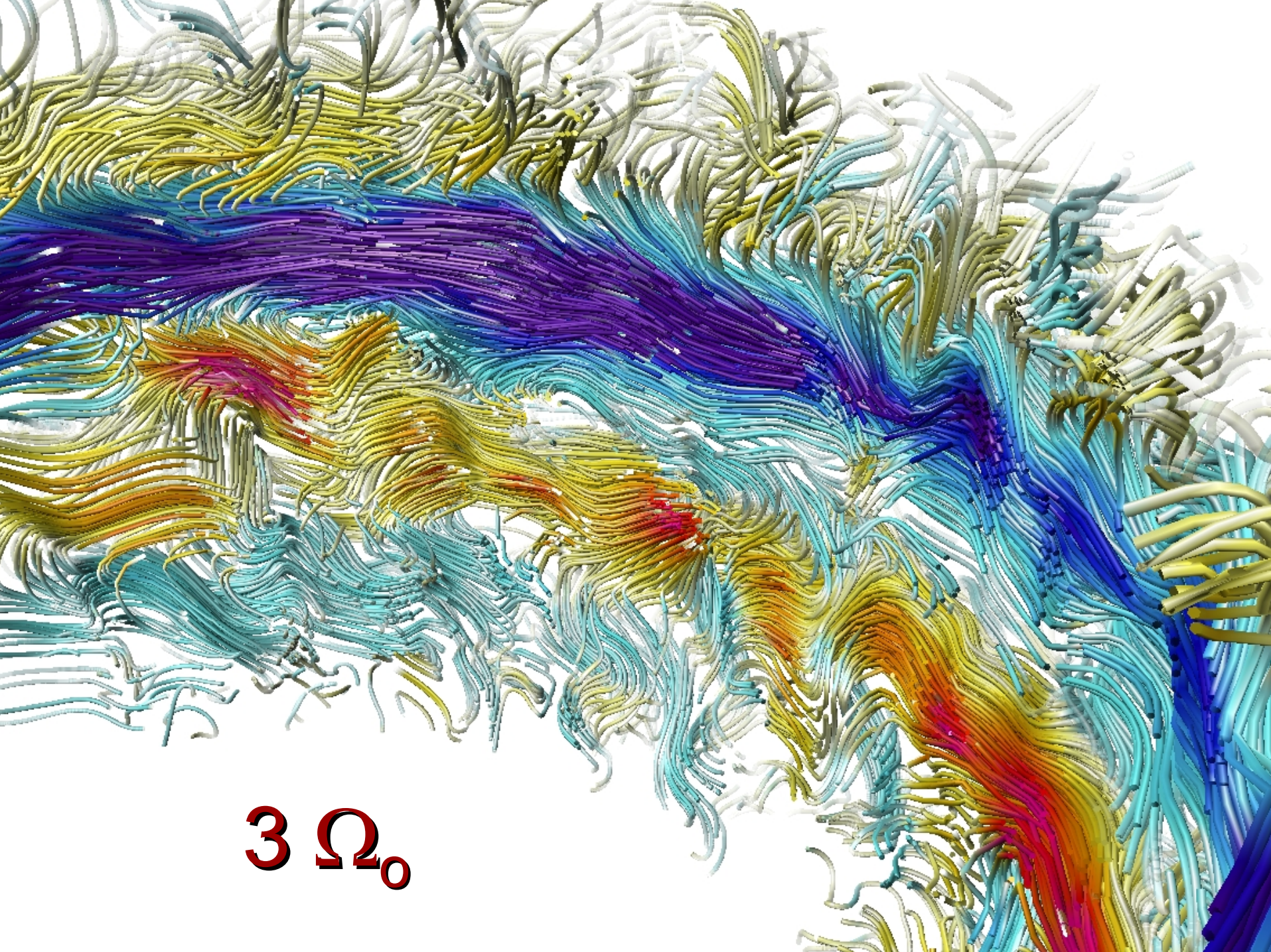
Mean shear
 $(B \bullet \nabla)U$

Fluc shear
 $(b \bullet \nabla)u$

Poloidal field



$3 \Omega_o$



3 Ω_0

Some dynamos oscillate

CKE

DRKE

