

Dynamo in numerical multi-helical MHD flows

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Cattaneo et al [1] presented a numerical evidence that, in the frame of the resistive M.H.D, the alpha effect in helical flows is not the underlying mechanism of dynamo effect at high magnetic Reynolds number R_m . They shown in fact that it decreases as the inverse of R_m . Although Blackman et al[2] suggested, using analytic developments, that this result is strongly correlated to the combination of periodic boundary conditions and the existence of an uniform mean field in the simulation, quenching of alpha effect seems not being an artificial phenomenon induced by periodic boundary conditions as observed by Branderburg et al [3]. We present a 3D numerical study of the dynamo effect to highlight the role of the multi-helical fields in the persistence of a large scale magnetic field.

References

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- [3] A. Branderburg and P.H. Diamond, *Astrophys. J*, **369** 824.