



Small scaled magnetic field structure within the core

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In contrast to convection in the mantle the dynamics of the core flow is largely determined by the the Coriolis force, as inferred by the extremely small Ekman number E of the fluid outer core. Recent advances in numerical techniques and in parallel computation make it possible to calculate dynamo simulations at an Ekman number as low as $E = 10^{-5}$ to 10^{-6} . It is demonstrated that in this parameter range the generated magnetic field is no longer dominated by the dipole component, but that a few small-scaled magnetic spots dominate the field structure. Within these spots the local magnetic field strength largely exceeds the dipole strength. Animations of the calculated fields demonstrate that the spots are randomly generated and move dominantly in north/south direction. Possible generation mechanisms and implications of this field structure will be discussed.