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Magnetic field generation in extrasolar planets

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In recent years planets outside our own solar system larger that 5 earth masses, termed superearths, have been detected. Next to this future space missions such as NASA's Kepler should have the precision to even detect smaller earth like planets in the near future. It is reasonable to assume that the universe hosts diversely structured planets with variable planetary masses and it is our main question how planetary mass and core to planetary mass ratio influence the thermal evolution of such planets. By using parameterized 1D thermal evolution models including core freezing and a temperature and pressure dependent viscosity in the mantle we investigate the ability of planets with sizes between 0.1 and 10 earth masses to generate magnetic fields and the timescales during which this magnetic field is existent. We investigate for instance how the varying planetary mass and the core to planetary mass ratio influence the inner core growth.