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Influence of hot plasma on magnetodisc structure at Saturn

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We present results of a modelling study undertaken with the UCL Magnetodisc Model in Saturn configuration [*Achilleos, Guio and Arridge*, *Mon. Not. Roy. Ast. Soc.*, **401**, 2349 (2010)]. The level of hot plasma pressure within the magnetosphere has a strong influence on the magnetic field configuration, under the assumption of force balance in the rapidly rotating plasma. We use a 'hot plasma index' to represent this pressure, and higher values of this parameter lead to a thinner equatorial current sheet and a more radial field. In addition, the magnetic moment of the disc current relative to the planetary dipole moment increases with hot plasma index, with the model unable to provide static solutions beyond limiting values of this index and the disc moment. We discuss the implications for the range of hot plasma pressures observed within the Kronian environment during the Cassini era.