



Looking for a Radio Pulse from Hot Jupiters

G. Hallinan (1,2), S. Sirothia (3), I. Chandra (3), J.G. Doyle (4), A. Antonova (5) and A. Golden (2)

(1) Department of Astronomy, University of California, Berkeley, CA 94720-3411, USA (gregg@astro.berkeley.edu)

(2) Centre for Astronomy, School of Physics, National University of Ireland Galway, Ireland

(3) National Centre For Radio Astrophysics, Tata Institute Of Fundamental Research, Pune, India

(4) Armagh Observatory, College Hill, Armagh BT61 9DG, Northern Ireland

(5) Department of Astronomy, University of Sofia, Sofia, Bulgaria

Abstract

A signature property of the radio emission produced by the magnetized planets in our solar system, generally believed to be electron cyclotron maser emission, is narrow beaming at large angles to the local magnetic field. By extension, it may be the case that the radio emission produced by extrasolar planetary systems is only detectable for specific ranges of rotational phase during which the magnetic field in the source region is suitably orientated to our line of sight. We have commenced observations using the Giant Metre-wave Radio Telescope (GMRT) to search for such emission from suitable hot Jupiters. We observe the targets for an entire period of rotation to specifically investigate the presence of radio emission confined to narrow ranges of rotational phase - effectively looking for a pulse. We will present the first results from these observations, consisting of 40 hours on each of 2 hot Jupiters at a frequency of 150 MHz. These data have yielded the deepest images ever produced at 150 MHz, by a factor of a few. We will also discuss the extension of this observation campaign to include a blind survey of 1600 square degrees looking for radio emission from ~ 2000 hot Jupiters.