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The association between giant pulsations (Pgs) and the auroral oval

G. Chisham, D. Orr

Department of Physics, University of York, Heslington, York, YO1 5DD, U.K.

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Abstract. Two features of giant pulsations (Pgs) which still require an explanation are firstly, why Pgs occur mainly in the early morning sector (i.e. 03:00-07:00 MLT) and not at other times of day, and secondly, why Pgs occur preferentially in a narrow latitudinal band (approximately 63°-68° geomagnetic latitude). Using statistics from 34 Pg events observed by the EISCAT magnetometer cross, a comparison has been made between the location of the Pg resonant field lines and the equatorward edge of the auroral oval. The majority of these Pg events appear to occur just poleward of this boundary. Using these results, an explanation of the two features of Pgs as detailed above is made. This explanation involves the interaction of protons, which may be responsible for the Pg events, with the inner edge of the plasma sheet or with its ionospheric equivalent, the equatorward edge of the auroral oval.

Correspondence to: D. Orr

Article not available online

Present address: Astronomy Unit, School of Mathematical Sciences, Queen Mary and Westfield College, University of London, Mile End Road, London, E1 4NS, U.K.

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helpdesk.link@springer.de

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