



## **An auroral imager for KuaFu and missions to the outer planets**

M. Lester, N. Bannister, E.J. Bunce, G.W. Fraser, A. Martindale, S.E. Milan, P.M. Molyneux, R. Willingale, H. Yates, and T.K. Yeoman

University of Leicester, Dept. of Physics and Astronomy, Leicester LE1 7RH, United Kingdom (MLE@ION.LE.AC.UK, +44 116 252-3555)

Auroral imagery from space has proved to be a major key to the understanding of the coupling between the solar wind and magnetospheres. For example, global auroral imaging can quantify the amount of open magnetic flux in the polar cap, the variability of which is a direct measure of the dynamics of the magnetosphere. Furthermore, imaging of localised features at UV wavelengths from space - the magnetospheric cusps on the dayside and the substorm initiation region on the nightside - provides information which is difficult or indeed impossible to obtain from the ground. We report here the continuing development of a compact far-UV auroral imager based on square-pore microchannel plate (MCP) optics. Going forward from initial design reported by Bannister et al. (*Annales Geophysicae*, 26, 519 – 532, 2007) we have now measured angular resolutions at 121nm which are compatible with the science goals of the KuaFu mission. Our demonstration of a photon-counting MCP detector with a convex input surface matched to the square-pore optic will make possible global imaging of the aurora from altitudes much lower than previously required. Finally, we discuss the potential of the new instrument for imaging the aurorae of other planets, in particular Jupiter and Saturn, where the physics controlling the auroral dynamics and morphology is different from that at Earth.