The Wide Field Auroral Imager (WFAI) for the KuaFu Mission

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The Wide Field Auroral Imager (WFAI) is a novel instrument designed to allow imaging of the global auroral oval at relatively low altitudes. Present instruments have a narrow field of view (FOV), requiring their host spacecraft to have a high apogee in order to image the complete auroral oval. By utilising a novel slumped microchannel plate (MCP) optic, we have developed a design for a new type of imager with a wide FOV, which also has a small volume and low mass compared with previous instruments. This instrument will form part of the payload on the two KuaFu B spacecraft and will operate both at apogee, in the northern hemisphere, and perigee, in the southern hemisphere. The perigee imaging, in particular, will allow the first systematic, global, auroral imaging studies to be undertaken simultaneously in the northern and southern hemispheres. In this paper we describe the basic design of the instrument for the KuaFu mission.