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Electron acceleration by drift wave solitons in the magnetopause: joint Cluster-Double Star observations MALCOLM DUNLOP, RAOUL TRINES, JACKIE DAVIES, ROBERT BINGHAM, CCLRC Rutherford Appleton Laboratory, Didcot, UK, LUIS SILVA, TITO MENDONCA, Instituto Superior Tecnico, Lisbon, Portugal, PADMA SHUKLA, Ruhr-Universitaet Bochum, Bochum, Germany — Joint Cluster and Double star observations at the dusk flank magnetopause have shown evidence for bi-streaming (aligned to the magnetic field direction), energised electrons in the magnetopause boundary layer. We believe this distribution is maintained by solitary structures associated with electrostatic zonal flows, which carry drift-mode solitons down the density gradient within the magnetopause boundary layer. These structures are typically elongated along the magnetic field direction. The observations uniquely provide five point measurements and sample boundary structure on multiple spatial scales. Combined electron measurements cover both the energetic (40-1000 keV) and thermal (20 eV-20 keV) energy range. This information allows us to investigate the comparative behaviour both within and on either side of the magnetopause, and at both low and high latitude locations simultaneously.

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