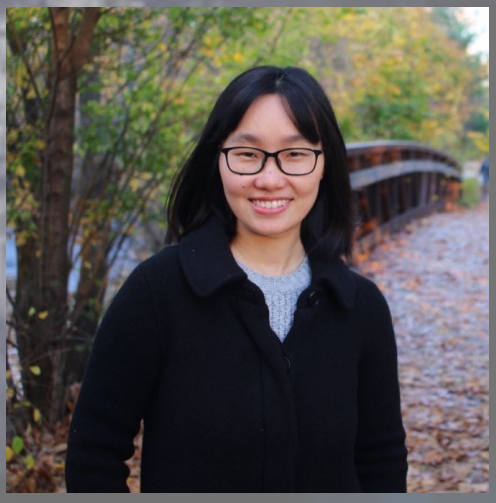
BOSTON UNIVERSITY

Boston University College of Arts & Sciences
Center for Space Physics

2020—2021 SPACE PHYSICS SEMINAR SERIES

Energetic Electron Precipitation into Earth's Upper Atmosphere Driven by Magnetospheric Waves

There are a variety of magnetospheric plasma waves that play a role in precipitating electrons into the Earth's upper atmosphere. Among those waves, electromagnetic ion cyclotron (EMIC) waves and plume whistler mode waves have drawn particular attention. While previous studies showed support for the link between EMIC waves/plume whistler mode waves and energetic electron precipitation, the quantitative role that EMIC waves play in precipitating relativistic electrons remains an open question. The temporal and spatial variation between plume whistler mode waves and energetic electron precipitation also remains to be further understood. In this study, we perform a statistical analysis of the coincidence occurrence rate of the EMIC waves observed by Van Allen Probes and relativistic electron precipitation events detected by POES and its dependence on different wave and plasma parameters from 2013 to 2018, by taking advantage of the long term data set and conjunction of Van Allen Probes and POES. The relative importance of H+ band and He+ band EMIC waves in scattering relativistic electrons is also compared. We also explore in detail the spatial and temporal scales of the modulated energetic electron precipitation observed by the BARREL balloons from plume whistler mode waves observed by Van Allen Probes.



Thursday, November 12th

4:00-5:00 p.m.

See website for Zoom information

Murong Qin

Boston University