Abstract Submitted
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Double Mid-Latitude Dynamical Reconnection at the Magnetopause[1] FRANCESCO PEGORARO, FRANCESCO CALIFANO, University of Pisa, MATTEO FAGANELLO, Aix-Marseille University, TOMMASO ANDREUSSI, Alta Space — The interaction between the solar wind and the Earth's magnetosphere can have a non-local character due to the fact that the magnetic field lines, being frozen in the plasma over most of the configuration, can act as rods and transfer momentum and energy very effectively to locations far from the equatorial flank region where the primary Kelvin-Helmohltz instability develops. Eventually external constraints, such as the field lines being tied to the Earth, require that energy be released through the development of field line reconnection. Three-dimensional simulations of the Kelvin-Helmholtz (K-H) instability in a magnetic configuration reproducing typical conditions at the flank Earth's magnetosphere during northward periods show the system ability to generate favorable conditions for magnetic reconnection to occur at mid-latitude. Once these conditions are established, magnetic reconnection proceeds spontaneously in both hemispheres generating field lines that close on Earth but are connected to the solar wind at low-latitude, allowing direct entrance of solar wind plasma into the magnetosphere.

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