Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Shear FlowInterchange Instability in Nightside Magnetotail Observed as "Auroral Beads at Substorm Onset WENDELL HORTON, University of Texas at Austin, J. DERR, R. WOLF, Rice University, B. BREIZMAN, University of Texas at Austin — Lowfrequency shear flowinterchange waves transmit sheared zonal flows along magnetic flux tubes toward the ionosphere from the nearEarth nightside plasma sheet create the "auroral beads observed in Canada and Alaska observed as the geomagnetic substorm onset. A set of nonlinear pdes is derived and solved to model the growth and saturation of the auroral beads. The relation with the Kalmoni model (2015, https://doi.org/10.1002/2015JA021470) for shear flowballooning instability is explained. The shear flowinterchange instability appears to be responsible for substorm onset. The growth starts in the midnight region of the nightside magnetotail producing in the nonlinear stage the auroral beads characteristic of geomagnetic substorm onset.

Wendell Horton
University of Texas at Austin

Date submitted: 01 Jul 2020 Electronic form version 1.4