

Abstract Submitted  
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**Double Layers and Electron Holes in Space Plasmas** NAGENDRA SINGH, University of Alabama, Huntsville — Electron holes are highly nonlinear structures in plasmas. Since electron holes require electron beams for their formation, they are intimately related to double layers in plasmas; they are a dominant feature of the plasma on the high potential side of a double layer. We will briefly review theory, simulations, satellite observations and laboratory studies on electron holes. Their relationship with double layers as seen in simulations and satellite observations will be confirmed. Their shape and size as found in simulations, observations and recent laboratory experiments will be discussed. The detection of electron holes and double layers driven by magnetic flux ropes, depolarization events, bursty bulk flows, and magnetic reconnection in the Earth's magneto-tail will be discussed. The dissipation of magnetic energy and currents in the large-scale magnetic structures by electron holes and double layers will be highlighted.

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