Abstract Submitted
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Stability of Brillouin Flow in Slow-Wave Structures[1] DAVID SIMON, Y.Y. LAU, GEOFFREY GREENING, PATRICK WONG, RONALD GILGENBACH, Univ of Michigan - Ann Arbor, BRAD HOFF, Air Force Research Laboratory — For the first time, we include a slow-wave structure (SWS) to study the stability of Brillouin flow in the conventional, planar, and inverted magnetron geometry. The resonant interaction of the SWS circuit mode and the corresponding smooth-bore diocotron-like mode is found to be the dominant cause for instability, overwhelming the intrinsic negative (positive) mass property of electrons in the inverted (conventional) magnetron geometry [1]. It severely restricts the wavenumber for instability to the narrow range in which the cold tube frequency of the SWS is within a few percent of the corresponding smooth bore diocotron-like mode in the Brillouin flow. This resonant interaction is absent in a smooth bore magnetron. [1] D. H. Simon, et al., *Physics of Plasmas* **22**, 82104 (2015).

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