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Ion Energy Distribution Measurements Downstream of the High Power Helicon Plasma Thruster with a Flux Conserving Nozzle Configuration ILIA SLOBODOV, University of Washington, ROBERT WINGLEE, JAMES PRAGER, TIM ZIEMBA, B. RACE ROBERSON — The high power helicon (HPH) deposits up to 40 kW of power into a plasma, generating a plasma beam with a measured source density of $1x10^{20}$ m^{-3} and energies in the range of 20-40 eV. Recently, the arrangement of magnetic nozzles downstream of the plasma source has been modified in order to produce a flux conserving configuration. Retarded field energy analyzer (RFEA) measurements of the ion energy distribution functions at two locations downstream of the plasma source, 67 cm and 144 cm away, have been carried out. Data on the number density, ion velocity, and energy density of the plasma beam at these locations will be presented. An improvement in performance over the previous nozzle configuration is observed. Additionally, results suggest that the energy density of the beam does not decrease with distance from the source between the two locations.

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