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Application of Oxide cathode discharge source in a linear plasma device GUANGHAI HU, JINLIN XIE, LIN YUAN, XIAOLI JIN, HONG LI, WANDONG LIU, University of Science and Technology of China — A plasma source using barium oxide indirectly heated cathode is attached to one end of a linear plasma device. The homemade source provides a uniform, quiet and reproducible plasma column with a diameter 10 cm in the 2 meters long linear chamber. The peak density is around 10^{19} m^{-3} with a neutral pressure $5 \times 10^{-2} \text{ Pa}$. Besides the normal pulse running mode, a quasi-steady state running mode is also tested, in which a low density plasma is maintained for days long. We also found that the electron emissivity of the cathode is doubled when scandium oxide is added into the cathode as an impurity. Initial result of the low frequency drift wave turbulence and related transport are presented.

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