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Development of plasma sources for ICRF heating experiment in KMAX mirror device XUAN SUN, MING LIU, HONGSHEN YI, MUNAN LIN, PEIYUN SHI, University of Science and Technology of China — KMAX, Keda Mirror with AXisymmeticity, is a tandem mirror machine with a length of ˜10 meters and diameters of 1.2 meters in the central cell and 0.3 meters in the mirror throat. In the past experiments, the plasma was generated by helicon wave launched from the west end. We obtained the blue core mode in argon discharge, however, it cannot provide sufficient plasma for hydrogen discharge, which is at least 10ˆ12cm-3 required for effective ICRF heating. Several attempts have thus been tried or under design to increase the central cell's plasma density: (1) a washer gun with aperture of 1cm has been successfully tested, and a plasma density of 10ˆ13 cm-3 was achieved in the west cell near the gun, however, the plasma is only ˜10ˆ11 cm-3 in the central cell possible due to the mirror trapping and/or neutral quenching effect (2) a larger washer gun with aperture of 2.5 cm and a higher power capacitor bank are being assembled in order to generate more plasmas. In addition, how to mitigate the neutrals is under consideration (3) A hot cathode is been designed and will be tested in combination with plasma gun or alone. Preliminary results from those plasma sources will be presented and discussed.

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