

Recent Development of RF-driven Multicusp H⁻ Ion Sources,

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- H-ions have found important applications in particle accelerators. A multicusp source can be used to generate volume-produced H-ions in pure hydrogen discharge. Most recently, the SSC rf-driven H-source was modified to enhance the H-output by adding cesium to the discharge. With a new cesium dispensing system, H-beam current in excess of 100 mA and e/H-ratio close to one have been observed. For pulsed mode operation, a xenon flash lamp can replace a tungsten filament as a starter for the rf discharge. If the duty factor is low, over 98% of the electrons in the extracted beam can be removed by means of a specially designed permanent magnet insert structure without any significant deterioration of the H-ion output. The H-beam can be chopped periodically by applying a positive bias voltage on the plasma electrode. A fast electronic switch has been developed and results of the beam-chopping experiment will be presented.

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