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Selective trapping of hydrogen plasma in mirror machine ILAN BE'ERY, OMRI SEEMANN, Technion - Israel Institute of Technology, AMNON FRUCHTMAN, Holon Institute of Technology, AMNON FISHER, AMIRAM RON, Technion - Israel Institute of Technology — When ablation plasma, consisting mostly of hydrogen and carbon ions and neutral, is injected through the throat of a mirror machine, pure hydrogen plasma is observed to accumulate inside the mirror trap. In this work we study the formation of magnetized plasma beam, the scattering out of the loss cone, and the plasma decay in the mirror trap. The selective accumulation of hydrogen ions is shown to be a result of the difference in the magnetic channeling through a limiter and of difference in scattering probabilities into the trapped regions of phase space. The accumulation of plasma in the trap is limited by centrifugal drift instability, convecting plasma to the walls.

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