Heating and stabilization of mirror confined plasma by rotating magnetic field

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The effect of rotating magnetic field (RMF) on hydrogen plasma confined in magnetic mirror machine is studied. The coupling and heating of right-handed RMF is much stronger than left-handed RMF, which indicates the coupling is mainly to helicon modes. At low trap magnetic field, the right-handed RMF increases the flute instability growth rate and the angular velocity of plasma rotation. With higher trap magnetic field, the right-handed RMF stabilizes the flute instability. The mechanisms of RMF coupling and stabilization are discussed.