ABSTRACT

In this paper, the prospects for electron cyclotron resonance heating (ECRH) and high power, high frequency gyrotrons are examined. Recent experimental and theoretical progress at MIT on the development of gyromonotrons and gyroklystrons is described. It is shown that cw gyrotrons capable of MW powers and high efficiency are consistent with the technological constraints of the device. The design parameters of 1 and 10 MW, 120 GHz monotrons are given. An ECRH system based on such rf sources is described and compared with alternative plasma heating techniques.