

70. Intensity Distribution Across The Output Of Copper Vapour Laser Discharge

V. K. Jadhao, A. P. Pachkawade, K. K. Hurde, K. P. Kadam

ABSTRACT

The intensity distribution across and along the laser output beam exhibits different structures at different electron temperatures. The output beam has Gaussian distribution at low electron temperatures (1eV) and at high electron temperature (10 eV) at the axis of the laser beam becomes annular. At moderate electron temperatures at the axis the part of beam may be annular and the part may be Gaussian. The computed results show very good agreement with the experimental results.

The time and space resolved output intensity of copper vapour laser discharge has been investigated. The ionization and recombination rate coefficients of different ionic species of helium, neon and copper are obtained as function of electron temperature and from which the fractional abundances are then obtained. The electron impact excitation rate coefficients are obtained and the output power by the plasma at the particular electron temperature is calculated. The electron temperature and the density are assumed to behave like zero order Bessel function having maximum at the axis and minimum near the walls. The time and space variation of intensity has been studied by considering different electron temperatures at the axis.