

ABSTRACT

ABSTRACT: Theories predict that neutrals play a roll in the L–H (low-to-high confinement mode) transition in tokamak plasmas via charge exchange damping. Previous estimates of neutral damping have been based on calculations of the edge neutral density. This work introduces a new method of measuring the neutral density near the X–point, where simulations predict it to be a maximum. The technique employed uses D_α light from a TV camera reconstructed onto a poloidal plane, along with Thomson scattering measurements of the electron temperature and density. Measured neutral densities span the range 10^9 to 10^{13} cm^{-3} . Good agreement is found between the measurements and two-dimensional simulations, verifying the simulations and corroborating previous conclusions that neutral damping plays a role in the L–H transition process.