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Influence of atomic radiations in HID discharge Lamps ANTOINE SAHAB, Universit de Toulouse, UPS, INPT, LAPLACE (Laboratoire Plasmas et Conversion dEnergie) 118 route de Narbonne, F-31062 Toulouse Cedex 9, France, MOHAMAD HAMADY, Faculty of Sciences, Lebanese University, El-Hadath, Beirut, Lebanon , GEORGES ZISSIS, Universit de Toulouse, UPS, INPT, LAPLACE (Laboratoire Plasmas et Conversion dEnergie) 118 route de Narbonne, F-31062 Toulouse Cedex 9, France — Radiations of plasma discharge lamps come from different mechanisms that take place inside the lamp. The knowledge of atomic data responsible for these radiations is essential to describe the radiations that take place inside them. A ray tracing method based on the resolution of radiative transfer equation is adopted. The discharge is divided into small cells responsible for launching rays in all directions. The calculations consider that the discharge has a cylindrical symmetry and assume the plasma is at local thermodynamic equilibrium (LTE). Hence, the only knowledge of temperature profile and pressure is sufficient to calculate the plasma composition and to account the mechanisms of broadening of spectral lines in the treatment of radiative transfer. In this work, the atomic data is the only resource to calculate both coefficients. We will show the results for a pure mercury HID lamp. For each spectral line, the local absorption and emission coefficients are strongly dependant on the broadening constants. Calculations reported in the literature use different values for these constants, leading to marked differences in output of the models.

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