Experimental Stark Widths and Shifts in the 3p ^{3}D – 3d $^3F^o$ O III Transition

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Stark widths (W) and shifts (d) of 3 doubly ionized oxygen (O III) spectral lines (326.085 nm, 326.532 nm and 326.720 nm) in the 3p ^{3}D-3d ^{3}F^o transition have been measured in the optically thin helium-oxygen plasma created in a linear, low-pressure, pulsed arc discharge at a 26 000 K electron temperature and $1.1 \cdot 10^{23}$ m^{-3} electron density. Our Stark shifts are the first measured data at an electron temperature smaller than 30 000 K. No theoretical W and d data exist in this O III transition. Our W and d values are compared with the existing experimental data. On the basis of the found agreement among the experimental W and d values at a 26 000 K electron temperature we have evaluated their dependence on the electron temperature ranged between 10 000 K and 50 000 K.

Key words: Plasma Spectroscopy; Line Profiles; Atomic Data.