

# Profiles of Pressure Broadened Spectral Lines in an Arc Plasma

Reda A. El-Koramy and Abd El-Halim A. Turkey

Physics Department, Faculty of Science, Assiut University, 71516 Assiut, Egypt

Reprint requests to Dr. R. A. El-K.; E-mail: elkoramy@yahoo.com

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Spectral analysis of the alkali metals is characterized by pressure profiles. In the present work an electric arc has been used to calibrate the half-width of the intensity used in the construction of the ArI natural line at 4300 Å with a trace of evaporated rubidium at pressures of 1, 2 and 3 atmospheres. The results agree well with those obtained by Kusch's line absorption equation in an electric furnace in the point of view of impact approximation, showing that the widths of the lines have Lorentz shapes. It is found that a simple treatment can be given using the quasi-static approximation of pressure broadening developed by Unsöld. The agreement of the results is good only if the shifts are large. The study shows that the pressure line profile is made up of a sum of dispersion profiles and asymmetric terms which arise from interactions of quadratic Stark effect, commonly assumed to be the force in causing foreign gas broadening.

*Key words:* Pressure Broadening; Arc Plasma; Lorentz Shapes; Quadratic Stark Effect.