

## Reply to "Stark broadening of potassium lines"

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When our experimental Stark widths of potassium *ns-4p* and *nd-4p* lines are reanalyzed, we find good agreement with theory.

In the preceding Comment,<sup>1</sup> Konjević has pointed out several mistakes in the analysis of our experimental Stark widths, as well as a discrepancy in the theoretical data with which we compared our results.<sup>2</sup> In deducing the Stark widths from experimental line-shape measurements, we incorrectly assumed a Lorentzian instrument function, and thereby simply subtracted the instrumental width rather than performing a Voigt line-shape analysis. When these corrections are made in Table I and Fig. 4 of Ref. 2, we find that our measured Stark widths for potassium are in good

agreement with the theoretical calculations of Griem.<sup>3</sup>

We are also indebted to N. Konjević for performing additional calculations for the lines for which there were no theoretical data available at the time of our analysis. These calculations, made for our experimental conditions ( $T_e = 2950$  K), and including the additional contribution due to ion broadening, show an average  $\pm 20\%$  agreement with our experimental Stark widths for the transitions in both the *ns-4p* and *nd-4p* series.

The correct Table I is reproduced below.

TABLE I. Experimental Stark widths of potassium excited-state transitions ( $N_e = 2 \times 10^{15} \text{ cm}^{-3}$ ) compared with theory.

Transition	Wavelength (nm)	Full width (Å)	
		Measured	Calculated <sup>a</sup>
$7S_{1/2}-4P_{1/2}$	578.2	$0.42 \pm 0.20$	0.35
$8S_{1/2}-4P_{1/2}$	532.3	$0.77 \pm 0.36$	0.70
$9S_{1/2}-4P_{1/2}$	508.4	$1.51 \pm 0.66$	...
$10S_{1/2}-4P_{1/2}$	494.2	$2.60 \pm 1.10$	...
$5D_{5/2}-4P_{3/2}$	583.2	$0.55 \pm 0.25$	...
$6D_{5/2}-4P_{3/2}$	536.0	$0.97 \pm 0.44$	1.10
$7D_{5/2}-4P_{3/2}$	511.2	$1.85 \pm 0.80$	1.98
$8D_{5/2}-4P_{3/2}$	496.5	$3.61 \pm 1.50$	...

<sup>a</sup> From Ref. 3 with  $T_e = 5000$  K.

<sup>1</sup>N. Konjević, preceding paper, Phys. Rev. A 31, 673 (1985).

<sup>2</sup>J. P. Hohimer, Phys. Rev. A 30, 1449 (1984).

<sup>3</sup>H. R. Griem, *Spectral Line Broadening in Plasmas* (Academic, New York, 1974).