QUANTITATIVE ANALYSIS OF NON-ADIABATIC PREDISSOCIATION OF Li_2 $(F\,^1\Sigma_g^+)$

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Extensive recent measurements[a] of the widths of predissociating levels of the $F(4)\,^1\Sigma_g^+$ state of Li_2 are analysed within an adiabatic description of the interstate mixing of the $F(4)$ and $E(3)\,^1\Sigma_g^+$ states. The coupling operator driving the predissociation is the sum of two terms of the form $(-\hbar^2/2\mu)\left[2\,W_e'(R) + W_e(R)\frac{d}{dR}\right]$, where each $W_e(R)$ function is a Lorentzian centred at one of the avoided crossings between the adiabatic F– and E–state potential energy curves.[b] Application of an updated[c] version of photodissociation code BCONT[d] allows the parameters of the two Lorentzians defining this coupling operator to be quantitatively determined from a direct least-squares fit to the 274 measured[a] line widths for $^{7,7}Li_2$.

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[b] A. Bandrauk and M. S. Child, *Mol. Phys.* **19**, 95 (1970).
[c] R. J. Le Roy, *http://theochem.uwaterloo.ca/~leroy* (2000).
[d] R. J. Le Roy, Comp. Phys. Comm. **52**, 383 (1989).