PHOTODISSOCIATION OF ULTRACOLD MOLECULES

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Translationally cold molecules can be produced during photoassociation experiments on ultracold atoms. We explore the photodissociation of these ultracold molecules in given rovibrational levels of their lowest electronic state into the excited electronic states. More precisely, we study the dissociation of $^7\mathrm{Li}_2$ molecules in specific rovibrational level of the triplet electronic state $a^3\Sigma_u^+$ to the 2s+2p limit. We observe structures at extremely low energies.
We also explore the dissociation of the vibrational levels of the excited electronic states formed during photoassociation experiments on ultracold atoms. They are produced in specific rovibrational levels, and due to the presence of shape resonances, it is found that for certain energy regimes, the cross sections are strongly enhanced. Precise calculations will be presented for lithium.

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