

- [1] Boudiffa et al., Science, 87, 3 (2000)  
[2] Sullivan et al., Phys Rev A, 68, 042708 (2002)

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Abstract Submitted

**A New Apparatus for Studies of Low Energy Electron Collisions with Nucleotide Molecules** JESSICA DURON, LEIGH HARGREAVES, Cal State Univ., Fullerton — Low-energy electrons, the most copiously produced by-product of radiation cancer therapy, have been shown to be a strong driver of DNA damage in living cells [1]. Quantitative data describing these collisions are presently rare due to technological challenges in performing electron scattering measurements from the nucleobases, e.g. uracil, thymine, guanine, etc. These challenges include the low-vapor pressure of commercial samples (which are powders at room temperature), and the difficulty in making accurate flow measurements from heated gas sources, required to establish the absolute scale of the measured data. Based on techniques pioneered in positron collision physics [2], a new apparatus is presently undergoing commissioning at the California State University Fullerton, which aims to address these issues. We will make the first cross-section measurements for slow ( $E_0 \leq 30\text{eV}$ ) electron collisions with nucleotides. We will report design parameters and ongoing progress in the commissioning of this new experiment.

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