

Dr. Francois Mauger, LSU Department of Physics and Astronomy

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Title: Watching Electrons Move Around in Molecules

Progress in both theory and experiments on strong field laser-matter interactions has made it possible to probe the structure of matter at the natural space and time scales of bound electrons, the attosecond and the angstrom. In my presentation, I will discuss the state of the art for such attosecond experiments and explain some of the theoretical models used to interpret them. I will show how both classical and quantum mechanical frameworks – and the correspondence between them – can be applied, and how the tools of nonlinear dynamics offer a unique perspective for understanding laser-driven dynamics. I will illustrate these ideas with results from my current and past research and will discuss the prospects for observing electron migration inside of molecules using strong laser fields.