

Abstract Submitted  
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**The effect of off-resonant excitation on intensity-intensity correlation spectra in three-level, lambda systems** CHRISTOPHER DILORETO, CHITRA RANGAN, University of Windsor — Developing methods for the detection of single molecules interacting with the environment has been a large area of research. These methods are quite varied in their execution and include antigen binding, surface plasmon resonance and fluorescence among many others. These methods all take advantage of the fact that molecular processes often change how a substrate interacts with light when a certain molecule is bound to it. With this in mind, we investigate if energy level changes of a fluorescent molecule due to ambient interactions can be detected by monitoring the two-time intensity-intensity correlation spectrum of the molecule when driven by electromagnetic waves. As these correlations depend on the severity of the off-resonance driving excitation, if the two-time intensity-intensity correlation spectrum were to be continuously monitored for a target transition in a three-level system, any changes that occur in the correlation spectrum could be used to determine if the energy levels have changed and if any interactions have taken place.

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