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Detecting level crossings without looking at the spectrum M. BHATTACHARYA, B2 Institute, Department of Physics and College of Optical Sciences, The University of Arizona, Tucson, AZ 85721, USA, C. RAMAN, School of Physics, Georgia Institute of Technology, — Crossings and avoided crossings are a ubiquitous phenomenon in physics, and are associated with many important physical effects such as Berry's phase, Feshbach resonances and quantum chaos. We present an algebraic technique to detect level crossings which does not require the solution or complete knowledge of the Hamiltonian of the system [1,2,3]. Details of the method, including a novel way to visualize crossings, will be presented using the simple example of a ground state hydrogen atom in a magnetic field [4].

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