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Analytical study of level crossings in the Stark-Zeeman spectra of ground state OH[1] MISHKATUL BHATTACHARYA, NATHAN CAWLEY, ZACHARY HOWARD, Rochester Institute of Technology, MICHAELA KLEINERT, Willamette University — The ground electronic, vibrational and rotational state of the OH molecule is currently of interest as it can be manipulated by electric and magnetic fields for experimental studies in ultracold chemistry and quantum degeneracy. Based on our recent exact solution of the corresponding effective Stark-Zeeman Hamiltonian, we present an analytical study of the crossings and avoided crossings in the spectrum. These features are relevant to non-adiabatic transitions, conical intersections and Berry phases. Specifically, for an avoided crossing employed in the recent evaporative cooling of OH, we compare our exact results to those derived earlier from perturbation theory.

[1]N. Cawley, Z. Howard, M. Kleinert and M. Bhattacharya, Eur. Phys. J. D. 35, 025007 (2014)

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