

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

The ground state OH molecule in combined electric and magnetic fields: exact solution of the effective Hamiltonian MISHKATUL BHATTACHARYA, ZACHARY HOWARD, School of Physics and Astronomy, Rochester Institute of Technology, Rochester, NY 14623, MICHAELA KLEINERT, Department of Physics, Willamette University, 900 State Street, Salem, OR 97301 — The OH molecule is currently of great interest from the perspective of ultracold chemistry, quantum fluids, precision measurement and quantum computation. Crucial to these applications are the slowing, guiding, confinement and state control of OH using electric and magnetic fields. In this talk, we will show that the corresponding eight-dimensional effective ground state Stark-Zeeman Hamiltonian is exactly solvable. We will discuss our results in the context of current experiments. Our analytical solution opens the way to insightful characterization of the magnetoelectrostatic manipulation of the OH molecule and is also immediately applicable to other diatomic free radicals such as ClO, SF, NS, OD and SrF.

Mishkatul Bhattacharya
School of Physics and Astronomy,
Rochester Institute of Technology, Rochester, NY 14623

Date submitted: 23 Jan 2013

Electronic form version 1.4