ANOMALOUS ZEEMAN SPLITTING IN THE ROVIBRATIONAL SPECTRUM OF THE OH RADICAL SOLVATED IN SUPERFLUID HELIUM or: HOW I LEARNED TO STOP WORRYING AND LOVE THE PROVERBIAL DROPLET EFFECTS

GARY E. DOUBERLY, *Department of Chemistry, University of Georgia, Athens, GA, USA*.

The hydroxyl radical was doped into a helium droplet, and a laser/droplet interaction zone was subjected to a homogeneous 0.425(2) Tesla magnetic field. Mid-infrared Zeeman spectroscopy reveals splittings of the $Q(3/2)$ Λ-doublet transitions that are 21 % larger than those predicted by both degenerate perturbation theory and a variational treatment of the Zeeman effect. This implies simply that the product $g_e B \Omega_{eff}$ is 21 % larger in superfluid helium than in the gas-phase. Although speculative, it is interesting to consider the results in the context of the Einstein-de Haas effect, in which coupling to droplet phonons induces a renormalization of the electron g factor.[a]

[a] J.H. Mentink, M.I. Katsnelson, M. Lemeshko, Quantum many-body dynamics of the Einstein-de Hass effect, *Phys. Rev. B*, **99**, 064428 (2019).