

Faraday Discussion questions

9

Thank you for that very thought-provoking paper. I was wondering whether you could comment on the likelihood of being about to see similar reaction interferometry effects in the case of electron spin. It has been found, for example, that collisions of molecules in $^2\Sigma$ states can often be treated on the basis that both nuclear spin and electron spin behave as spectators to the scattering.

20

I very much enjoyed your paper on the magnetic selection and detection of polarized $H_2(j=1)$. However, I wonder whether you could clarify one point for me. The discussion in the paper focusses very much on rotational *alignment*, but the H_2 molecule can also be *oriented*. Whilst I can understand that for an H_2 molecule approaching the surface in a helicopter configuration it would not matter whether the molecule were rotating clockwise or count-clockwise, unless the surface were chiral, that would not be the case for approach of H_2 in a cartwheel configuration. In the latter case, I would expect specular reflection for H_2 undergoing clockwise rotation (top-slice approach, say) would be different to that for H_2 with counter-clockwise rotation (back-slice approach). I wonder if you could comment on that?

42

I wonder if you could say anything further about the reason why the diatom-diatom stereodynamics changes so dramatically around the resonances shown in your paper? In the diatom-diatom case I assume it is more complicated to provide an explanation for the stereodynamical preferences compared with in the atom-diatom case.