Dear Editor:

We are grateful for having received these most recent comments and constructive criticisms on our manuscript. We have combined our supplementary materials into appendices of the main text and have transferred our submission to Physical Review A. We have made some minor edits, summarized below, in response to our reviewers.

Sincerely,

David Reens, Hao Wu, Tim Langen, and Jun Ye

Referee Comments:

----------------------------------------------------------------------  
Second Report of Referee A -- LF16145/Reens  
----------------------------------------------------------------------  
  
*“The picture presented involves the idea of the length of the quantization axis which is unfamiliar to me and I think to most readers. For most, the term ‘quantization axis’ refers to the z-axis of the coordinate system in which a calculation is done. It does not have a length and is not a property of the molecule. “*

Our Response: We still believe that the quantization axis picture we present is a useful one, but we have addressed this by changing the way we refer to the quantization axis. We no longer discuss it as a property of the molecule, but only the choice of possible axes is a property of the molecule.

*“I believe there is a clearer way to present the picture. In the preceding paragraph, the authors have already introduced the idea that both the magnetic and electric dipole moments are fixed to the internuclear axis. From the discussion of the trap geometry it is clear that there will be a plane where E is perpendicular to B. The internuclear axis will be aligned along E due to the strong interaction of the electric dipole with E, so the magnetic moment is perpendicular to B in this plane and there will be no Zeeman splitting. As a result, the spin is likely to flip when the molecule crosses this plane.”*

Our Response: We agree with this explanation, but find it unsatisfying from the perspective of one who would argue that the electric field vector ought to maintain a quantization axis, such as the authors and readers of Ref [30].

----------------------------------------------------------------------  
Second Report of Referee B -- LF16145/Reens  
----------------------------------------------------------------------  
  
*“The paper is not easy to read! It is more prepared for experts who have a good background knowledge on the dynamics of particles moving in a magnetic and electric trap.”*

Our Response: Perhaps now that we are targeting a more specialized journal, this is no longer a major drawback.

*“It might help to reduce the technical information in Fig. 1 caption, but more about comparing the spin-flips of molecules in different trap geometries.”*

Our Response: We agree with this, and have addressed it by adding a summarizing sentence earlier on in the caption: “A uniform electric field, added to magnetically trapped molecules for dipolar studies or other purposes, enhances spin-flip losses. Note in particular the increased size of the lowest contour (red) in panel (f) relative to panel (e); this result can be understood by considering Zeeman shifts under various conditions as shown in panels (a-c) and described further now…”  
  
*“I consider suppressing or controlling the molecular spin flips is  
the main message of this paper. This is not very clear from the title.  
What does ‘... spin loss and ... trap’ mean? I would recommend  
something along the line of ‘Controlling spin-flips of ultracold  
molecules in an electro-magnetic trap’.”*

Our Response: Thank you for this excellent suggestion. We have made this change.