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Magn. Reson. Discuss., referee comment RC2
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Comment on mr-2021-65

Anonymous Referee #2

Referee comment on "Radiation damping strongly perturbs remote resonances in the presence of homonuclear mixing" by Philippe Pelupessy, Magn. Reson. Discuss., https://doi.org/10.5194/mr-2021-65-RC2, 2022

This manuscript describes counter-intuitive effects of radiation damping (RD) on the trajectories of a small resonance in the sample in the presence of a large water resonance. In particular, it is shown that RD effects are seen even during a homonuclear mixing sequence (DIPSI-2) where one perhaps would expect RD effects to disappear due to potentially strong spin locking. I would say, this manuscript does not make it easy for the reader to appreciate what is being found, other than there are clearly some RD effects. It would be helpful if the text could contain an interpretation of what is actually happening other than simply comparing simulation and experiment. The description of the validation / control experiments (modulating the H2O z-magnetization) experiments is also a bit brief, and it would be helpful to have more guidance for the reader. There are further details, which I feel should be discussed. For example, what is the actual bandwidth of the DIPSI? What would happen if the bandwidth were infinite? Are the RD effects only a consequence of the non-ideality of DIPSI? If that is the case, the effects are perhaps not really so surprising? The description of the simulations is also unclear, was it performed for a spin-lock or for the actual multi-pulse sequence?