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Magn. Reson. Discuss., author comment AC2
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Reply on CC6

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Author 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-AC2, 2022

Dear Matt Augustine,

Thank you for your comments and the reference you mentioned, which seems to have anticipated many later works. I prefer not to go into any practical aspects. The effect described in the article strongly depends on the exact instrumentation, the pulse sequence and the mixing time. Moreover, what is a tolerable perturbation depends on the system under study and the information one wants to obtain. TOCSY mixing sequences are mostly used in 2D experiments (briefly discussed in the revised version), which makes the analysis even more complex (and providing recommendations difficult) since one has to take into account the evolution of the solvent during the indirect evolution time. In the revised version, I do give (stimulated by Tom Barbara's and the reviewers' comments) a more thorough theoretical analysis of the effect in the limit of very strong RF fields. This could help the reader estimate the maximum possible perturbation for a given sequence and radiation damping parameters. If the TOCSY pulse train keeps control of the solvent, the effect is linear with the concentration. I am considering to add a concise version of this answer to the conclusions.

Kind regards,

Philippe