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Interactive comment on "Surprising absence of strong homonuclear coupling at low magnetic field explored by two-field NMR spectroscopy" *by* Ivan V. Zhukov et al.

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Disclaimer: I am mainly working in EPR spectroscopy. But I find the article interesting and well written. The described spin dynamics are fascinating and interesting for (potential) applications.

I do have a few questions/comments:

1) The situation where heteronuclear couplings "quench" the effect of a strong homonuclear coupling appears similar to the origin of the "spin diffusion barrier" in EPR/DNP. In the latter, a difference in hyperfine couplings between protons and an unpaired elec-

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tron inhibits the efficient polarization transfer between these protons, even if there is a strong homonuclear dipolar coupling between them. Hyperfine decoupling reduces this effect. Some readers with a different background might find it helpful if this similarity is pointed out (if you agree it is there).

2) I find it a bit awkward to use “surprising” in a title.

3) Eq (1): it seems there should be a minus sign before ω_1. Or is it intentionally left out?

4) You give the homonuclear J-couplings in table 1. Could you also give the 1H-13C couplings of the protons that couple to these carbons? Or did I miss them?

5) Related to 4) Would you be willing to share your simulation code? I would be interested to look at the influence of different couplings strengths and field-cycling speeds.

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