

Comments from the Journal

1. We noticed that you used scientific abbreviations in the "Short summary" text and kindly ask you to provide at least one written out version. This does not apply to chemical elements.

We rephrased the Short summary without scientific abbreviations

2. Please ensure that the colour schemes used in your maps and charts allow readers with colour vision deficiencies to correctly interpret your findings. Please check your figures using the Coblis – Color Blindness Simulator (<https://www.color-blindness.com/coblis-color-blindness-simulator/>) and revise the colour schemes accordingly.

The Figures layouts and the colours were revised and checked with Coblis.

Referee #1

The article is significantly improved. I do have a few minor comments.

"At short electron-proton distances the proton spin diffusion is blocked by the gradient of the electron's magnetic field."

This is incorrect or should be tamed: this may be correct on the time scale of the ih-RIDME experiment.

We specified the condition for this approximation: "*At short electron-proton distances the proton spin diffusion is **slowed down** by the gradient of the electron's magnetic field **and can be considered inactive on a time scale of a single shot in a pulse EPR experiment.***"

"In the formula above, the quadrupolar interaction for is neglected $I > \frac{1}{2}$ "

This is not mentioned earlier and as your work is focused on spin $\frac{1}{2}$, ^1H here, you could remove this.

This sentence is removed.

"Not all protons around the electron spin contribute to the spectral diffusion processes"

This has to be justified. You may mean "on the times scale of the RIDME experiment"

"If in a pair of protons, the difference of the hyperfine couplings is much greater in absolute value than the nuclear-nuclear interaction, we call such protons strongly coupled to the electron"

This depends on the T2 ZQ of the nuclei pair and may only be called "blocked" on the time scale of the ih-RIDME.

Since these two remarks are related to the same paragraph, we added a sentence in front of it: "*We restrict further considerations to the cases to the systems and measurement conditions where nuclear longitudinal (T_{1n}) and zero-quantum relaxation ($T_{2,ZQ}$) can be neglected on the time scale of the RIDME experiment.*"

"Such a characteristic value is called a blocking radius, R_{bl} . It represents the region of electron-nuclear distances where protons have the strongest contribution to spectral diffusion"

blocking radius is confusing. I would have called R_{sp} for spin diff as it is where the spin diffusion is acting, not blocked.

We agree with this suggestion. We changed R_{bl} to R_{sp} and did minute text adjustment for consistency.