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Interactive comment on "Using nutation-frequency-selective pulses to reduce radio-frequency field inhomogeneity in solid-state NMR" *by* Kathrin Aebischer et al.

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*That looks fine to me. A couple of quick notes: One of the replies has been truncated: "For the black line, the IBURP pulse has always the ideal rf-field amplitude [...]. We have extended the last sentence in the figure caption of Fig. 2 to read: " [Added text is missing, but it will be in the manuscript.]

The sentence was actually in the reply but accidentally pasted one section earlier. We have extended the last sentence in the figure caption of Fig. 2 to read: "... while the blue line uses $\nu 2$ = ... as it would be the case in a real experiment with rf-field inhomogeneity." This will be corrected in the final response.

*"This must be a misunderstanding. In Fig. 7, we compare PMLG spectra with and without rf-amplitude selection and the zero-frequency artefact is strong in PMLG without selection of the amplitude. In Fig. 8 all spectra are with rf-amplitude selection and show very small artefacts. The artefacts are slightly bigger if we put the carrier in the center. We believe that the zero-frequency artefact comes from parts of the rotor where the rf field is much lower than the desired amplitude and these parts are suppressed by the selection. We hope this clarifies this question." This wasn't really a misunderstanding, more a reservation over the artifacts being described as "very small" in Fig. 8. The suppression is excellent off resonance in Fig. 7 and 8 (essentially complete suppressed), but only moderate on resonance. I guess the query is more over on vs. off-resonance behaviour.

Sorry for our misunderstanding of the original comment. This is a valid point. The axial peak with rf-field selection gets bigger, the closer the carrier gets to an area with spectral intensity. We are not really sure why this happens. However, compared to the axial peak without a B1-field selective pulse (see Fig. 7), the remaining axial peaks in Fig. 8 are still quite small but the suppression is not as perfect as it is outside the spectral range. We have amended the text to read now: "Figure 8 also illustrates that the use of B1-field selective pulses allows the placement of the carrier frequency inside the region of interest, as only a small but clearly visible carrier-frequency artefact is observed which can be completely eliminated by placing the carrier outside the region of interest (Fig. 8, blue spectrum). The magnitude of the carrier-frequency peak increases with increasing proximity to a real spectral peak." Unfortunately, we did not measure a spectrum without the selection pulse and the carrier in the center of the spectrum since they are usually dominated by the zero-frequency peak.

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