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Reply to review report

Kathrin Aebischer et al.

Author comment on "Effects of radial radio-frequency field inhomogeneity on MAS solid-state NMR experiments" by Kathrin Aebischer et al., Magn. Reson. Discuss., https://doi.org/10.5194/mr-2021-43-AC1, 2021

Since we have no special preference for radians, we have changed the units for the phase to degrees in figures 1 and 2.

We were not aware of the effect of time-modulated rf fields in R3 recoupling and would like to thank you for bringing this to our attention. This is quite interesting and we have incorporated it in the introduction. We have modified the relevant part on page 2 to: "In solid-state NMR under magic-angle spinning (MAS) conditions, the radial component of the rf field gets modulated by time (Levitt et al., 1988; Tekely and Goldman, 2001; Goldman and Tekely, 2001; Tos ˇ ner et al., 2017) leading to further potential complications in the experiments. Such MAS-induced time-dependent radio-frequency fields could give rise to additional or modified resonance conditions or to other changes in the effective Hamiltonians generated by the pulse sequence. The importance of such time-dependent terms was first described in rotary-resonance recoupling (Levitt et al., 1988) where it leads to changes in the observed line shape. Besides the appearance of additional sidebands in cross-polarization experiments (Tekely and Goldman, 2001; Goldman and Tekely, 2001), nutation spectra (Elbayed et al., 2005) and reported phase distortions and loss of magnetization in MLEV16 sequences under MAS (Piotto et al., 2001), there have been very few studies of the effects of such modulations of the amplitude and phase of the rf field caused by MAS rotation."

We have simulated the R3 experiment and see the same effect of an additional peak appearing in the center of the powder pattern identical what is shown in the original reference.