Editor comments are marked blue, response is marked black. Changes are marked red.

Malcolm Levitt, 20 Nov 2024

This excellent article should be accepted for publication in Magnetic Resonance, providing that the experimental procedure is described in sufficient detail to allow reproduction by other scientists, and to allow accurate simulations to be made. As it stands, this is still not fully the case. The caption for fig.2 has been improved, which moves in the right direction. It is now clearer that the PM pulses are implemented by applying a second, cosine-modulated microwave field, 90 degrees out of phase with the main spin-locking field, which has amplitude omega1 in frequency units, and that the frequency of the cosine modulation is also omega1. However, the amplitude of the second cosine-modulated field is still not specified, and the durations of the pulses are not given either. The authors refer in several places to ref.20 for further details but this is not an acceptable way of specifying important experimental details, and it is anyway not easy to extract these essential details from ref.20. The article may be published once precise specifications for the amplitude of the orthogonal microwave field and the durations of all pulses are given.

As described in our previous rebuttal, we had already added the timing of the phase-modulation pulses to Materials & Methods. This included the durations of all pulses. It reads: "The spin-lock pulse of duration 35 μs and phase +x immediately followed the $\pi/2$ mw pulse of length 4 ns and phase +y. This spin-lock pulse had constant mw frequency and constant amplitude ω_1. During PM pulses, the phase of the spin-lock pulse was cosine-modulated with frequency $\omega_{mod} = \omega_1$. The first $\pi/2$ PM pulse of length 22 ns was applied 996 ns after the end of the $\pi/2$ mw pulse. The PM π pulse had a length of 44 ns and the final $\pi/2$ PM pulse a length of 22 ns." We do not see a reason for duplicating this information in the caption of Fig. 2.

As usual, amplitude is defined by flip angle and pulses length, or, vice versa, at fixed amplitude, PM pulse length is determined by flip angle. We now added the procedure for setup to Materials & Methods.