Reply on CC3
Malcolm Levitt

Community comment on "Spin relaxation: under the sun, anything new?" by Bogdan A. Rodin and Daniel Abergel, Magn. Reson. Discuss.,
https://doi.org/10.5194/mr-2021-62-CC5, 2021

That's yet another fascinating historical insight, Tom. It makes it even more surprising that Abragam completely missed this line. I hope that Rodin and Abergel can modify the wording in their paper so that they don't appear to accuse Christian and myself of claiming to discover something "new under the sun". I had rather hoped that our paper was abundantly clear that we were not calling into question the "fundamental theory" as developed by Bloch, Hubbard, Redfield etc., but merely finding a convenient implementation outside the weak-order limit, that does not fall into the trap of the using the inhomogeneous master equation well outside its domain of validity, a domain which Bloch, Hubbard, Redfield, Abragam were all fully aware of. We were also clear that our work was merely an implementation of well-known techniques which are taken for granted by mathematical physicists, so definitely not something "new under the sun". I remember even having trouble convincing Christian that these results, which Christian largely extracted from the established literature, were worth publishing at all. Basically NMR lagged decades behind other fields in these matters, because our overwhelmingly common regime of weak spin order let us get away with it - until hyperpolarization became common. I think the only thing we can be accused of is of being somewhat late to press, by many decades it seems.