

Magn. Reson. Discuss., author comment AC3
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Reply on CC1

Tom Barbara

Author comment on "The Lindbladian form and the reincarnation of Felix Bloch's generalized theory of relaxation" by Thomas M. Barbara, Magn. Reson. Discuss., <https://doi.org/10.5194/mr-2021-50-AC3>, 2021

Thanks for you comments, Gottfried. The literature on Relaxation is large and long. Memory is often small and short. As I explained, I was just lucky in that I had studied these papers carefully long ago, and that a coworker got me "back in the game". Certainly I always admired those Bloch Hubbard papers, and it was happy thing to re-experience a kind of youthful enthusiasm.

Even the modern topic of Lindblad has a very large literature. Dave Siminovitch alerted me to the papers by Karl Lendi from the 1980's. There is also a nice paper by Jim Skinner and coworkers, who reproduce Bloch's result for spin locking and rotating frame relaxation in JCP 102 1995. I imagine that these authors have confirmed and deepened the scope of applicability of Bloch's result, but to know for sure would require some digging. Notations are always a challenge for me anyway.

I agree that the paper is concise but I also claim that it is pretty clear in most places. I am surprised that many readers are confused about section 2. To me it seemed a very straightforward application of matrix algebra and certainly I would expect most NMR scientists to have some familiarity with that aspect. And the approach I took allowed me to have free reign on various forms of expression so that I could work out Hubbard's formula in baby steps if you will. I thought it would be of interest to others.

As I worked on this topic I collected my thoughts in a set of notes and I am happy to share these with you if you like.