Magn. Reson. Discuss.,
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Open Access MAGNETIC RESONANCE Discussions

Interactive comment on "Open-source, 3D-printed, high-pressure (50 bar) liquid-nitrogen-cooled *para*-hydrogen generator" *by* Frowin Ellermann et al.

Anonymous Referee #1

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The authors describe construction and operation of high-pressure (50 bar) liquid-nitrogen-based parahydrogen generator (PHG) built from readily available components (total price <3k Euros). They demonstrate applications of PHG to SABRE hyperpolarization, quantify the precision of pH2 production and measure pH2 lifetime in a 1L aluminum cylinder. The results are overall well presented and are definitely useful for new researchers entering the field of PHIP/SABRE. The paper can be published as is subject to minor corrections. In particular,

Page 2, line 46: '0Z axis'? Should it be Z axis? Page 4, line 84: 'don't require much in terms of service' - poor word choice. Page 4, line 90: 'were performed ... - and still are'

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Discussion paper

- poor word choice. Page 4, line 95: 'way beyond' - poor word choice. Page 5, line 113: 'Iron (III) oxide' - should be hydrated iron oxide or FeO(OH) Page 8, line 183: should 'norm' stand for normal pressure and temperature (not standard)? See, for example, https://www.engineeringtoolbox.com/stp-standard-ntp-normal-air-d_772.html Page 10, line 227: '250 mm internal diameter, 360 mm outer diameter' - numbers seem too big, please check. Page 11, line 253: 'These collisions'? Page 11, line 259: 'ad-hoc' is used improperly in this sentence. Pge 12, line 269 and 273: errors and mean values should have the same number of significant figures, i.e., either 51.50(36) or 51.5(4)

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