

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC1  
<https://doi.org/10.5194/gi-2021-30-RC1>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on gi-2021-30

Dave Sheppard (Referee)

---

Referee comment on "Contributors to fluxgate magnetic noise in permalloy foils including a potential new copper alloy regime" by David M. Miles et al., Geosci. Instrum. Method. Data Syst. Discuss., <https://doi.org/10.5194/gi-2021-30-RC1>, 2021

---

This work is important and relevant to the field of magnetometry. The new copper alloy is novel and builds upon work done many decades ago. The direct comparison with the research standard 1" ring core permalloy sensors is useful in evaluation of the materials. The construction and evaluation of the material is well described in this paper. That is unique in that work done several decades ago on this topic was either not well described or not published in unclassified documentation. This is a good reference for fluxgate materials going forward.

The paper is clear and well written. The plots and diagrams are appropriate and well done. The references are good.

One small comment: On line 126, we read "*e quasi-toroidal drive windings are time-consuming to apply, but the closed flux path of the racetrack should reduce stray fields and offsets error compared to traditional parallel rod sensors*" However, there are neither measurements nor references used to support this statement. Additionally, the racetrack is compared to parallel rods here, but in the rest of the paper, the racetrack topology is compared to ring cores. This section is potentially improved by citing offset measurements, providing reference(s), and/or comparing the racetrack versus ring core topologies, as is done in the remainder of the document, in place of the parallel rods.

This is a good work and I look forward to following this research in the future. It is both important and relevant to the field of fluxgate magnetometry.