



# Technique for high axial shielding factor performance of large-scale, thin, open-ended, cylindrical Metglas magnetic shields

S. Malkowski, R. Adhikari, B. Hona, C. Mattie, D. Woods, H. Yan, B. Plaster

(Submitted on 13 Jul 2011)

Metglas 2705M is a low-cost commercially-available, high-permeability Cobalt-based magnetic alloy, provided as a 5.08-cm wide and 20.3- $\mu\text{m}$  thick ribbon foil. We present an optimized construction technique for single-shell, large-scale (human-size), thin, open-ended cylindrical Metglas magnetic shields. The measured DC axial and transverse magnetic shielding factors of our 0.61-m diameter and 1.83-m long shields in the Earth's magnetic field were 267 and 1500, for material thicknesses of only 122  $\mu\text{m}$  (i.e., 6 foil layers). The axial shielding performance of our single-shell Metglas magnetic shields, obtained without the use of magnetic shaking techniques, is comparable to the performance of significantly thicker, multiple-shell, open-ended Metglas magnetic shields in comparable-magnitude, low-frequency applied external fields reported previously in the literature.

Comments: 4 pages, 5 figures  
Subjects: **Atomic Physics (physics.atom-ph)**; Instrumentation and Detectors (physics.ins-det)  
Journal reference: Rev. Sci. Instrum. 82, 075104 (2011)  
DOI: [10.1063/1.3605665](https://doi.org/10.1063/1.3605665)  
Cite as: [arXiv:1107.2625](https://arxiv.org/abs/1107.2625) [physics.atom-ph]  
(or [arXiv:1107.2625v1](https://arxiv.org/abs/1107.2625v1) [physics.atom-ph] for this version)

## Submission history

From: Brad Plaster [[view email](#)]

[v1] Wed, 13 Jul 2011 18:37:17 GMT (58kb)

[Which authors of this paper are endorsers?](#)

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

physics.atom-ph

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

physics

[physics.ins-det](#)

## References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))



