Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Measurement of the resonance shift in the radar backscattering cross section of thick stainless steel fibers at 35 GHz SHARHABEEL ALYONES, The Hashinite University, Physics Department, Zarga 13115, Jordan, CHARLES BRUCE, New Mexico State University, Physics Dept, Las Cruces, NM, 88003 — Measurements of the radar backscattering cross section of stainless steel fibers with low length-to-diameter ratio (thick fibers) had been done at 35 GHz. The intention was to confirm the resonance shift in length predicted by a numerical solution of the general problem of electromagnetic scattering and absorption by finite conducting wires [1]. The numerical methods solves the generalized form of the Pocklington equation, which is valid for both thin and thick fibers. Single particle radar backscattering measurement system was used and the resonance shift had been confirmed for four sets of aspect ratios. The position of the first resonance is shifted to shorter lengths in comparison with the previous analytical solution of the problem by P. Watermann and J. Pedersen [2].
[1] Sharhabeel Alyones, Charles W. Bruce, and Andrei Buin, "Numerical methods for solving the problem of electromagnetic scattering by a finite thin conducting wire″, accepted for publication in *IEEE. Trans. Antennas and Propag.*
[2] P. C. Waterman, "Scattering, absorption and extinction by thin fibers," Accepted for publication in *J. Opt. Soc. A.*

Sharhabeel Alyones
The Hashinite University, Physics Department, Zarga 13115, Jordan

Date submitted: 02 Dec 2006 Electronic form version 1.4