

1086-45-1944      **Javad Abdalkhani\*** ([abdalkhani.1@osu.edu](mailto:abdalkhani.1@osu.edu)), The Ohio State University -Lima, 4240 Campus Drive, Lima, OH 45804. *Using Mathematica to Find the Exact or to Approximate the Analytical Solution of Volterra Equations*. Preliminary report.

The literature of the Volterra equations lacks simple and user friendly programs for their solutions in symbolic languages. In this talk two Mathematica programs are offered to find either the exact or the approximate solution of the Volterra equations: A powerful theorem in the literature due to R. Kress states that for all linear Volterra equations the Picard successive iterations, is always convergent. For cases where Picard's iteration fails to converge we introduce a Mathematica program for an implicit mid-point rule. In both cases the Aitken accelerator is used to speed up the convergence. (Received September 25, 2012)