Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

**A Novel Neural-Multigrid Strategy to Solve Compressible Euler Equation in Nozzle Using Finite Volume Method** ARASH TAHERI, Sharif University of Technology, SEYED MASOUD HOSEINI, Iran University of Science and Industry, MOHAMMAD SHAMS ESFAND-ABADI, Engineering Department, Tarbiyat Modarres University — In this research, a Neural-Multigrid technique is developed for solving Euler equation in nozzle using an implicit finite volume method. In this regard, the nested iteration strategy is used to achieve more accurate numerical guess during the iterations. As restriction and interpolation operators for transferring of data between coarse and fine grids only a Supervised Multilayer Perceptron Neural Network (MLPR) with one hidden layer is used. During the iterations a pre-conditioning switching matrix is employed as a technique to boost up the method. For iteration on error, a sparse real system solving strategy by Gaussian elimination is employed which uses Markowitz strategy and LU factorization, the result of simulation shows the robustness of the method.

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Date submitted: 09 Aug 2007 Electronic form version 1.4