

Scrutiny and Solving Analytically Nonlinear Differential at Engineering Field of Fluids, Heat, Mass and Wave by New Method AGM

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Abstract : As all experts know most of engineering system behavior in practical are nonlinear process (especially heat, fluid and mass, etc.) and analytical solving (no numeric) these problems are difficult, complex and sometimes impossible like (fluids and gas wave, these problems can't solve with numeric method, because of no have boundary condition) accordingly in this symposium we are going to exposure a innovative approach which we have named it Akbari-Ganji's Method or AGM in engineering, that can solve sets of coupled nonlinear differential equations (ODE, PDE) with high accuracy and simple solution and so this issue will be emerged after comparing the achieved solutions by Numerical method (Runge-Kutte 4th) and so compare to other methods such as HPM, ADM,... and exact solutions. Eventually, AGM method will be proved that could be created huge evolution for researchers, professors and students (engineering and basic science) in whole over the world, because of AGM coding system, so by using this software we can analytically solve all complicated linear and nonlinear differential equations, with help of that there is no difficulty for solving nonlinear differential equations(ODE and PDE). In this paper, we investigate and solve 4 types of the nonlinear differential equation with AGM method : 1-Heat and fluid, 2-Unsteady state of nonlinear partial differential, 3-Coupled nonlinear partial differential in wave equation, and 4-Nonlinear integro-differential equation.

Keywords : new method AGM, sets of coupled nonlinear equations at engineering field, waves equations, integro-differential, fluid and thermal

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