1086-35-728   **Jose Manuel Vega-Guzman*** (`jmvega@asu.edu`), PO 1782, Tempe, AZ 85280. *Solution Method for Certain Evolution Equations.* Preliminary report.

A method to construct solution of the Cauchy initial value problem for certain linear and nonlinear evolution equations is presented. Emphasis is placed mainly on the analytical treatment of nonautonomous differential equations, which are challenging to solve despite the existent numerical and symbolic computational software programs available at the moment. In the majority of such methods, ideas from Transformation theory are adopted allowing one to solve the initial value problem under consideration. The formulas obtained for the corresponding Kernels involve the solution of a Riccati(or Ermakov) differential equation associated to the problem. Examples from Fluid Dynamics, Finance and Physics will be presented in order to corroborate the method. (Received September 11, 2012)