

1079-35-241

**Aghalaya S Vatsala\*** (Vatsala@Louisiana.edu), Department of Mathematics, Univ. of Louisiana at Lafayette, Lafayette, LA 70504 1010, and **Donna Sue Stutson**. *Representation Form for One Dimensional Caputo Fractional Wave Equation and Comparison Results*. Preliminary report.

It is well known that fractional Brownian motion has been modeled as parabolic stochastic differential equation. In this work we develop a representation form for the solution of the deterministic one dimensional fractional wave equation with Caputo fractional derivative of order  $q$ , for  $1 < q < 2$ . For  $q = 1$ , and  $q = 2$ , it reduces to the one dimensional parabolic equation and one dimensional wave equation respectively. We will develop some comparison results which will be useful in the study of nonlinear fractional wave equation. (Received January 16, 2012)