

1163-34-643

Aghalaya S. Vatsala* (vatsala@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504. *Study of Sequential Caputo Fractional Differential Equations with Fractional Initial Conditions and Fractional Type Boundary Conditions*. Preliminary report.

It is well known that qualitative study of Caputo fractional differential equation has an advantage over the integer order differential equations. This is certainly true, if the order of the fractional derivative q , when $0 < q < 1$, which can be used as a parameter. This is also possible for Caputo fractional higher order differential equations if we assume that Caputo fractional order derivative of order ' nq ' is sequential of order ' q '. In this work, we present some basic results of Caputo sequential differential equations with fractional initial conditions and Caputo sequential boundary value problems. Our results yield the integer results as a special case. (Received September 10, 2020)