1135-34-1963 **Mohsen Razzaghi*** (razzaghi@math.msstate.edu), Department of Mathematics and Statistics, Mississipi State University, 175 President's Circle, Mississippi State, MS 39762. *An approximate method for solving fractional differential equations.*

Fractional differential equations (FDEs) are generalizations of ordinary differential equations to an arbitrary (non-integer) order. FDEs have attracted considerable interest because of their ability to model complex phenomena. Due to the extensive applications of FDEs in engineering and science, research in this area has grown significantly all around the world. Generally speaking, most of the FDEs do not have exact analytic solutions. Therefore, seeking numerical solutions of these equations is becoming more and more important. In this talk, an approximate method for solving fractional differential equations is presented. The method is based upon the fractional Taylor series approximations. The operational matrix for the fractional Taylor series is given. This matrix is then utilized to reduce the solution of the FDEs to a system of algebraic equations. The method is computationally very attractive and gives very accurate results. The numerical solutions are compared with available exact or approximate solutions in order to assess the accuracy of the proposed method. (Received September 25, 2017)