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Velinda R. Calvert* (vcalvert@math.msstate.edu) and **Moshen Razzaghi**. *Solving problems on the semi-infinite domain using rational Bernoulli functions.*

In this talk, a numerical method for solving nonlinear ordinary differential equations on the semi-infinite domain is presented. The method is based upon the modified rational Bernoulli functions, these functions are first introduced. Operational matrices of derivative and product of modified rational Bernoulli functions are then given and are utilized to reduce the solution of these equations to a system of algebraic equations. Illustrative examples are included to demonstrate the validity and applicability of the technique. (Received September 23, 2015)