1154-60-795 **Mark D. Dela*** (mddela@cpp.edu). *Numerically Solving a Rank-Based Forward Backward Stochastic Differential Equation by Applying the Least-Squares Monte Carlo Method.*

We describe a technique on how to numerically solve a rank-based FBSDE, a particular type of forward-backward stochastic differential equation (FBSDE) where the evolution of the forward component is described by a ranked-based diffusion (ranked-based SDE). To solve for the backward component of the rank-based FBSDE, we apply the Least-Squares Monte Carlo (LSMC) Method as documented by Gobet, Lemor, and Warin. This technique necessarily entails repeated simulation of the forward component, so we simulate the ranked-based SDE using a scheme presented by Ichiba and Karatzas, which takes advantage of the result that the gap process associated with the rank-based SDE is a particular kind of reflected Brownian motion. We implement both the LSMC Method and simulation of the rank-based SDE scheme in R and provide numerical results demonstrating the validity of the implementation and then apply this implementation to a rank-based SDE example. (Received September 10, 2019)