1086-35-319   **Indranil SenGupta*** (`indranil.sengupta@ndsu.edu`), Department of Mathematics, North Dakota State University, Fargo, ND 58108, and **Maria C Mariani** and **Ionut Florescu**. *PDE model, stochastic volatility and transaction costs.*

Option pricing with transaction costs and stochastic volatility leads to a nonlinear Black-Scholes type equation where the nonlinear term reflects the presence of transaction costs. We derive the model with transaction costs and we extend it to the case where the volatility is stochastic. When using a stochastic volatility model the market is incomplete and the option price is not unique. However, under a particular market completion assumption we derive the nonlinear PDE whose solution may be used to find the price of options. Under suitable conditions, we prove the existence of strong solutions of the problem. We give many practical examples when our model can be used. (Received August 20, 2012)

1