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**Indranil SenGupta\*** ([indranil.sengupta@ndsu.edu](mailto:indranil.sengupta@ndsu.edu)), Department of Mathematics, North Dakota State University, Fargo, ND 58108-6050. *Machine learning-based refinement of stochastic models and oil data analysis.*

A commonly used stochastic model for derivative and commodity market analysis is the Barndorff-Nielsen and Shephard (BN-S) model. Though this model is very efficient and analytically tractable, it suffers from the absence of long-range dependence and many other issues. In this presentation, we propose a machine-learning-based refinement of the BN-S model. Empirical applications validate the efficacy of the proposed model for long-range dependence. The model will be implemented for various oil price data to show the significance of the analysis. (Received May 08, 2020)