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Alexander Kerss (kerssad@cardiff.ac.uk), School of Mathematics, Cardiff University, Senghennydd Road, Cardiff, CF24 4 YH, United Kingdom, **Nikolai N Leonenko** (leonenkonn@cardiff.ac.uk), School of Mathematics, Cardiff University, Senghennydd Road, Cardiff, CF24 4 YH, United Kingdom, and **Alla Sikorskii*** (sikorska@stt.msu.edu), Department of Statistics and Probability, Michigan State University, 619 Red Cedar Road, East Lansing, MI 48824. *Fractional Skellam processes in modeling of high frequency financial data.*

Recent literature on high frequency financial data includes models that use the difference of two Poisson processes and incorporate a Skellam distribution for forward prices. The exponential distribution of inter-arrival times in these models is not always supported by the data. Fractional generalization of the Poisson process, or fractional Poisson process, overcomes this limitation and has Mittag-Leffler distribution of inter-arrival times. This paper defines fractional Skellam processes via the time changes in Poisson and Skellam processes by an inverse of a standard stable subordinator. An application to high frequency financial data set is provided to illustrate the advantages of models based on the fractional Skellam processes. (Received August 20, 2015)