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"Market making" behaviour in an electronic order book and its impact on the bid-ask spread

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It has been suggested that marked point processes might be good candidates for the modeling of financial high-frequency data. A special class of point processes, Hawkes processes, has been the subject of various investigations in the financial community. In this paper, we propose to enhance a basic order book simulator with limit and market orders arrival times following mutually (unsymmetrically) exciting Hawkes processes. Modeling is based on empirical observations on interval times between orders that we verify on several markets (equity, bond futures, index futures). We show that this simple feature enables a much more realistic treatment of the bid-ask spread of the simulated order book.

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