

**Estimating the efficient price from the order flow:
A Brownian Cox process approach**

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At the ultra high frequency level, the notion of price of an asset is very ambiguous. Indeed, many different prices can be defined (last traded price, best bid price, mid price,...). Thus, in practice, market participants face the problem of choosing a price when implementing their strategies. In this work, we propose a notion of efficient price which seems relevant in practice. Furthermore, we provide a statistical methodology enabling to estimate this price from the order flow.