

Hong Kong - Singapore joint Seminar Series in Financial Mathematics/Engineering

Market making and incentives design in the presence of a dark pool: a deep reinforcement learning approach

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Abstract

We consider the issue of a market maker acting at the same time in the lit and dark pools of an exchange. The exchange wishes to establish a suitable make-take fees policy to attract transactions on its venues. We first solve the stochastic control problem of the market maker without the intervention of the exchange. Then we derive the equations defining the optimal contract to be set between the market maker and the exchange. This contract depends on the trading flows generated by the market maker's activity on the two venues. In both cases, we show existence and uniqueness, in the viscosity sense, of the solutions of the Hamilton-Jacobi-Bellman equations associated to the market maker and exchange's problems. We finally design deep reinforcement learning algorithms enabling us to approximate efficiently the optimal controls of the market maker and the optimal incentives to be provided by the exchange.

About the speaker

Mathieu Rosenbaum is a full professor at École Polytechnique. His research mainly focuses on statistical finance problems, regulatory issues and risk management of derivatives. He published more than 65 articles on these subjects in the best international journals. He also has several editorial activities as he is one of the editors in chief of the journal "Market Microstructure and Liquidity" and is associate editor for 10 other journals. He received the Europlace Award for Best Young Researcher in Finance in 2014, the ERC Grant in 2016, the Louis Bachelier prize in 2020 and the Quant of the Year award in 2021.

Date

13 Apr 2022(Wednesday)
(HK Time)

Time

4:00pm – 5:00pm (HK
Time)

Zoom

<https://cityu.zoom.us/j/99824609167?pwd=VDBjM FN0dXBWa3pxY2lzdUJaWDdmZz09>

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