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**Title:** "Polynomial interacting particle systems and non-linear SPDEs for capitalization distribution curves"

**Abstract**

Motivated by the robustness of the market capitalization curves, we study the behavior of a certain polynomial equity market model as the number of companies goes to infinity. Indeed, we extend volatility stabilized market models introduced by Fernholz et al. by allowing for a common noise term. As the number of companies approaches infinity, we show that the limit of the empirical measure of the  $N$ -company system converges to the unique solution of a degenerate, non-linear SPDE. The obtained limit also has a representation as a conditional probability of the solution to a certain McKean-Vlasov SDE. Together with its conditional expectation this is again a polynomial process. This intriguing property can be extended to other more general McKean-Vlasov SDEs. The talk is based on joint work with Florian Huber.