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

Alpha-Heston Stochastic Volatility Model

Professor Ying Jiao

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Abstract

We introduce an extension of the Heston model where the instantaneous variance process contains a jump part driven by α-stable processes in order to describe large fluctuations on the market, in particular during the crisis periods. In this framework, we examine the implied volatility surface and its asymptotic behaviors for both asset and variance options. Furthermore, we examine the jump clustering phenomenon and provide a jump cluster decomposition. We show that each cluster process is induced by a first "mother" jump giving birth to a sequence of "child jumps". We first obtain a closed form for the total number of clusters in a given period. Moreover each cluster process satisfies the same α-CIR evolution of the variance process excluding the long term mean coefficient. Finally, we study the dependence of the number and the duration of clusters as function of the parameter α. This is a joint work with Chunhua Ma, Simone Scotti and Chao Zhou.

About the speaker

Ying Jiao received her Ph.D. from Ecole Polytechnique, Center for Applied Mathematics, France, in 2006. Before she joined Claude Bernard University - Lyon 1 as a University Professor, she was a Lecturer at University Paris Diderot - Paris 7 and an associated professor at Peking University during 2008 -2013. Her research interests are in the theory of stochastic processes and their applications in mathematical finance and risk modelling.

Date

21 Apr 2022(Thursday)

(HK Time)

Time

4:00pm – 5:00pm (HK Time)

Zoom

https://cityu.zoom.us/j/97124761650?pwd=YTV3MHIzaTVpUjJCbVppaDh3b2ZsUT09

Meeting ID:
971 2476 1650

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