

**February 7<sup>th</sup>, 2020**

**KAP 414**

**3:30 P.M. – 4:30 P.M.\*\*\***

**Professor Aditi Dandapani**  
(Columbia University/Ecole Polytechnique)

**“From Quadratic Hawkes to Rough Volatility  
and Zumbach Effect”**

**Abstract:** Using microscopic price models based on Hawkes processes, it has been shown that under some no-arbitrage condition, the high degree of endogeneity of markets together with the phenomenon of metaorders splitting generate rough Heston-type volatility at the macroscopic scale. One additional important feature of financial dynamics, at the heart of several influential works in econophysics, is the so-called feedback or Zumbach effect. This essentially means that past trends in returns convey significant information on future volatility. A natural way to reproduce this property in microstructure modeling is to use quadratic versions of Hawkes processes. We show that after suitable rescaling, the long term limits of these processes are refined versions of rough Heston models where the volatility coefficient is enhanced compared to the square root characterizing Heston-type dynamics. Furthermore the Zumbach effect remains explicit in these limiting rough volatility models.

**\*\*\*THIS IS A FRIDAY COLLOQUIUM, WILL BEGIN AT  
3:30PM**