

## SEMINAR OF ACTUARIAL AND FINANCIAL MATHEMATICS

organized by Quantact, the CRM Laboratory of Actuarial and Financial Mathematics

Concordia University  
Pavillon J.W. McConnell (Library) Building  
LB-646  
Friday, October 28, 2016, 14:30-15:30

**Phillip Protter**

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### **A Connection Between the Expansion of Filtrations and the Origin of Financial Bubbles**

Using the definition of a bubble as a strict local martingale, we improve the idea of a test for the presence of bubbles developed by Y. Kchia and the speaker to develop a working test, and using it on historical data over a 13 year period we compute the empirical distribution of the lifetimes of financial bubbles. Next we explain, under certain special circumstances involving Heston type models with stochastic volatility, how a martingale can transform into a strict local martingale via an expansion of a filtration coupled with a change of the risk neutral measure. We then interpret this idea within the context of financial markets and the creation of bubbles, where a bubble can in theory be related to an influx of exciting information to the market. We give a mathematical construction of how this can arise.

This talk is based on joint work with Aditi Dandapani.

Website: [http://quantact.uqam.ca/index\\_en.html](http://quantact.uqam.ca/index_en.html)