

# WHEN IS A MOVING AVERAGE A SEMIMARTINGALE?

ANDREAS BASSE

## ABSTRACT

Continuous time moving averages, as e.g. the fractional Brownian motion, the Ornstein-Uhlenbeck process and their generalizations, have been used repeatedly in finance, turbulence and related fields. The present talk is concerned with the question when is a moving average a semimartingale; various filtrations are considered. In particular, necessary and sufficient conditions are provided for a moving average to be a semimartingale when the driving process is a Brownian motion, a Lévy process or a Gaussian chaos process. To show these results we use and prove a new characterization of Gaussian chaos semimartingales.

DEPARTMENT OF MATHEMATICAL SCIENCES, UNIVERSITY OF AARHUS,  
NY MUNKEGADE, DK-8000 ÅRHUS C, DENMARK.

*E-mail address:* `basse@imf.au.dk`