

## **Talk: Affine infinite-dimensional stochastic covariance models**

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### *Abstract*

Infinite-dimensional stochastic covariance models are used e.g. for forward prices (of currencies or commodities). Such models require the construction of a flexible yet tractable class of stochastic process taking values in the cone of positive operators. In the finite-dimensional (i.e., matrix valued) setting, so-called 'affine covariance models' are popular -- examples include the Wishart processes (1991) and the Barndorff-Nielsen and Stelzer model (2007). A full characterization of the class of all affine processes taking values in the cone of positive semi-definite matrices was given by Cuchiero et al. (2011).

We have constructed a class of affine infinite-dimensional stochastic processes taking values in the cone of positive Hilbert-Schmidt operators that allows for state-dependent jumps. State-dependent diffusion poses more difficulties: we have shown that an infinite-dimensional Wishart process exists if, and only if, the initial value of the process is of finite rank -- in this case, the process remains of finite rank. In particular, the finite-dimensional theory does not carry over one-to-one to the infinite-dimensional setting, but one can construct relevant classes of processes.

Joint work with Christa Cuchiero, Sven Karbach, and Asma Khedher.