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# Delayed stochastic systems and Hormander spanning conditions

*Friday, October 20, 2017 9:45 AM (45 minutes)*

Malliavin's probabilistic proof of Hormander's criterion can be considerably simplified using some rough path theory - at the end. In our case, we are interested in non-Markovian SDEs, where the non-Markovian aspect finds its source in the presence of delays. As such
- I shall present a framework for RDEs with delays. Extensions if time allows.
- I will show the application to finding a simple spanning condition of "Hormander-type" for delayed SDEs/RDEs which garantees smoothness of densities. Malliavin calculus is kept to the minimum.
This is extracted from a joint body of work with I. Ekren.

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