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## Uncertainty Analysis of Railway Track Measurements

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The maintenance process of railway tracks was for a long time purely event-driven, i.e., reactive. In the last decade, considerable research and development effort has been made in order to turn this into a pro-active work, i.e., analyse data from railway net as well as traffic, model a position-specific stress in terms of wear and predict the time for a required maintenance action.

One of the main challenges in this process is the collection of railway track measurements. The state-of-the-art is to estimate the position-specific state of a track based on signals of acceleration sensors. The signal of such sensors contains white noise which covers the relation between track geometry, vehicle speed and the response variables, i.e., x-, y- and z-accelerations.

In the railway community, there are established standards on how filter signals from acceleration sensors, using specific low-pass and band-pass filters. This talk illustrates some key results found in the course of a research project on the effect of the filters and repeated measurements on the acceleration signals in rail track measurements.

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