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## **Bayesian non-linear mixed effects model for safer powder storage**

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Powders are ubiquitous in the chemical industry, from pharmaceutical powders for tablet production to food powders like sugar. In these applications, powders are often stored in silos where the powder builds up stress under its own weight. The Janssen model describes this build up, but this model has unknown parameters that must be estimated from experimental data. This parameter estimation involves several challenges, such as structural unidentifiability and correlated measurements. To overcome these challenges, a Bayesian non-linear mixed effects model, that incorporates data from two different measurement set-ups, is implemented in Turing.jl.

### **Type of presentation**

Talk

### **Classification**

Mainly application

### **Keywords**

Non-linear mixed effects, Bayesian, Powder, Pharmaceutical Manufacturing

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