Bayesian Calibration for RF Switch Example
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Motivation
- Uncertainty quantification in model parameters: infer/calibrate the probability distributions of parameters from available data

Bayes Network
- A probabilistic graphical model that represents a set of random variables and their conditional dependencies via a directed acyclic graph
- Includes various sources of uncertainty, errors, model predictions and experimental data
- Systematic way to combine multiple sources of error

Example: 1-D RF Switch (Fixed-Fixed Beam)
- Fixed-fixed beam, distribution of $L$ is unknown (to be calibrated)

Bayesian Calibration – General Scheme
- Calibrate the probability distribution of model parameter
- Bayesian calibration

Imprecise Experimental Data – Interval Data
- The voltage is increased in 5-volt steps during the measurement, the pull-in voltage is reported within a 5-volt range → interval data
- Incorporate interval data into likelihood function

Summary
- Developed Bayes network for the calculation of 1-D RF switch pull-in voltage
- Implemented Bayesian calibration for Young’s modulus, based on 1-D RF switch model (fixed-fixed beam), accounting for interval data