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MODEL MISSPECIFICATION IN SIMULATION-BASED INFERENCE

Bayes theorem

$$p(\theta \mid x) = \frac{p(x \mid \theta)p(\theta)}{p(x)}$$

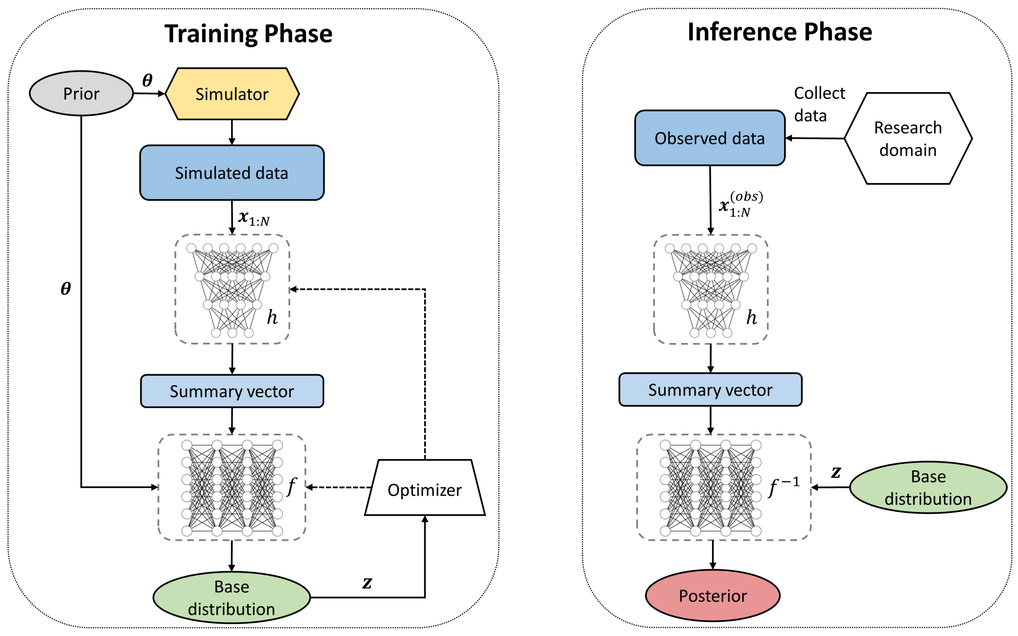
posterior — *likelihood* — *prior* — *evidence*

Simulation framework

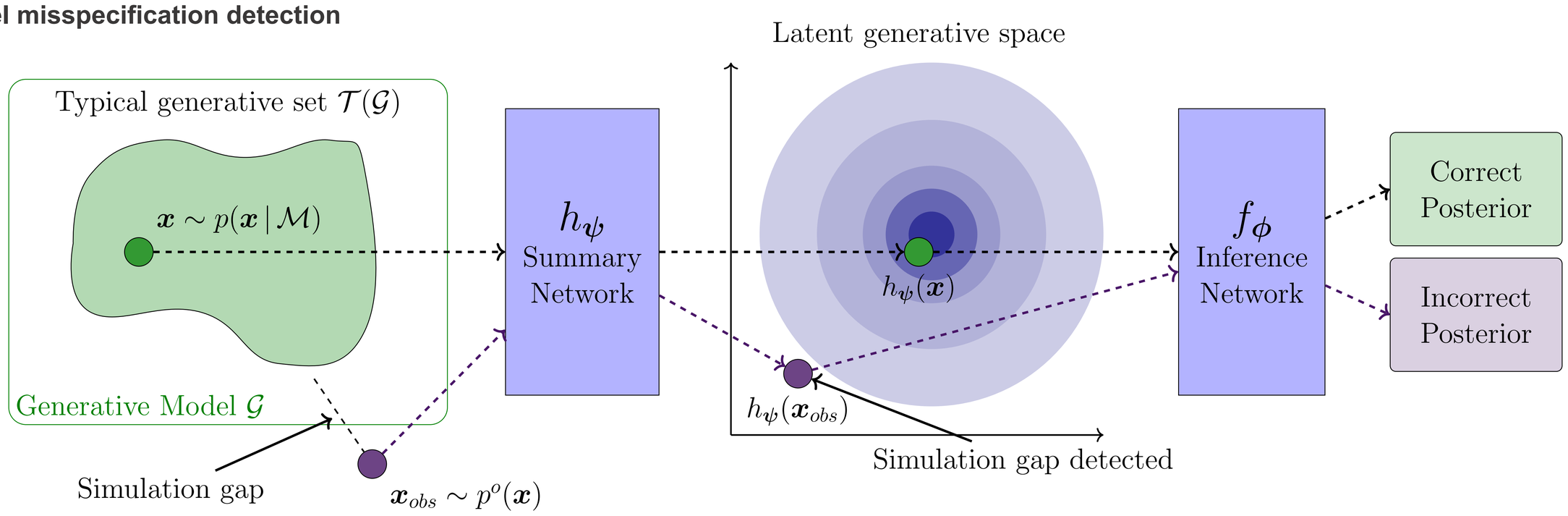
$$\mathcal{G} = (g(\theta, \xi), p(\xi|\theta), p(\theta))$$

simulator $x = g(\theta, \xi)$ — *contamination* $\xi \sim p(\xi|\theta)$, — *prior* $\theta \sim p(\theta)$

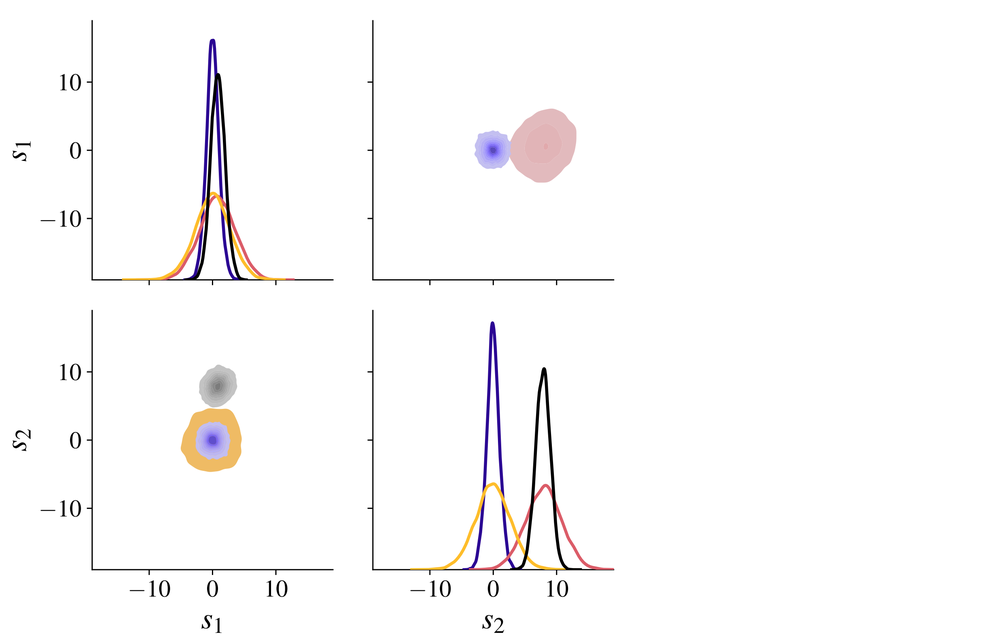
Amortized posterior estimation (BayesFlow)



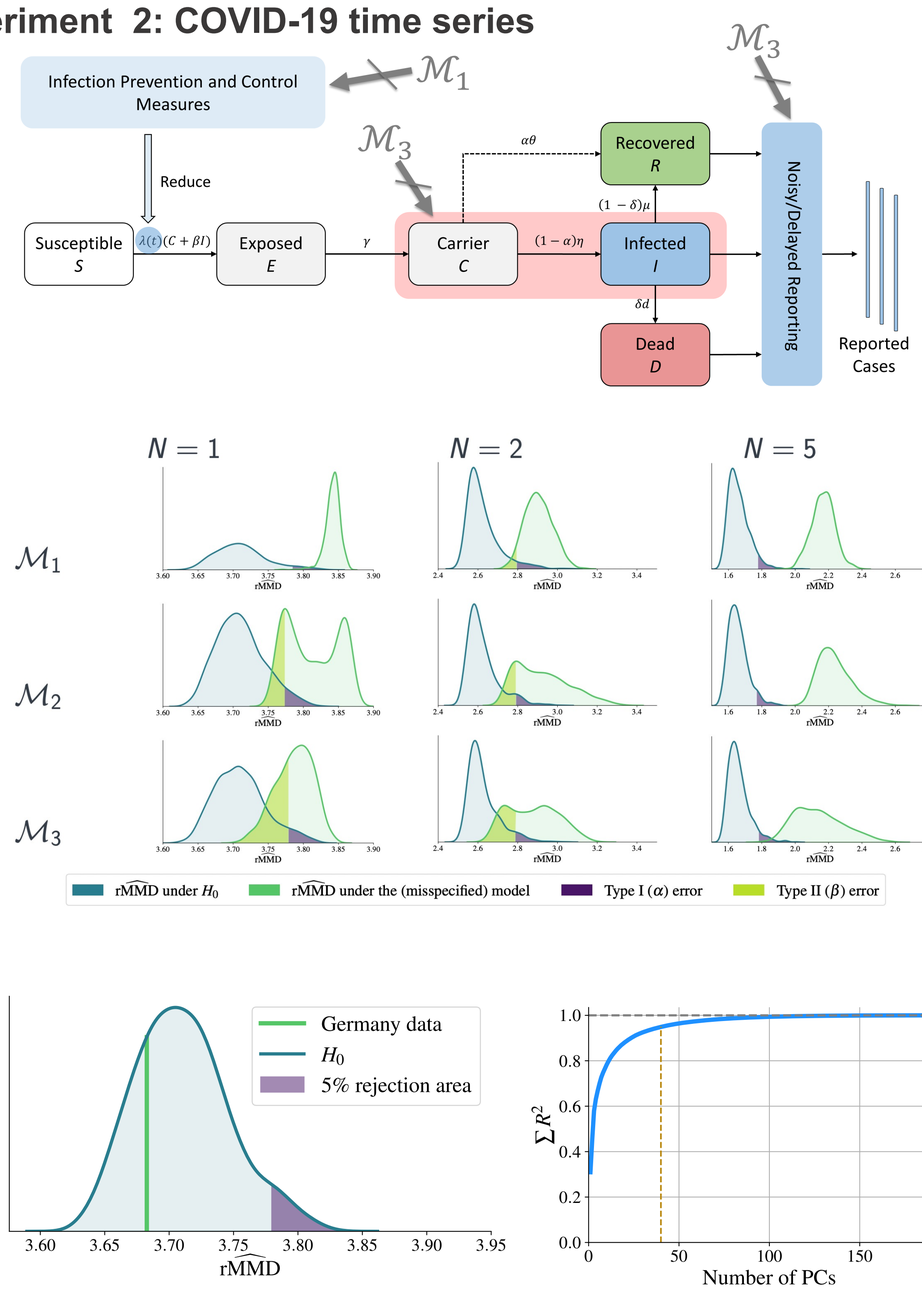
Model misspecification detection



Experiment 1: Toy Normal Model



Experiment 2: COVID-19 time series



Preprint: Schmitt, M., Bürkner P. C., Köthe U., & Radev S. *Detecting Model Misspecification in Amortized Bayesian Inference with Neural Networks*. arXiv:2112.08866.