

Title: Bayesian Statistics and Stan

Instructors: Raphael Hartmann & Constantin Meyer-Grant

Abstract:

This two-day workshop offers a hands-on introduction to Bayesian statistics and modeling, blending foundational theory with practical applications.

Day 1 focuses on core Bayesian concepts, including probability, likelihood, Bayes' Rule, and the interpretation of Bayesian inference. Participants will explore key ideas such as priors, posteriors, and Bayes factors through a combination of theoretical discussion and interactive exercises. We will also introduce how to formulate statistical and cognitive models within the Bayesian framework—both analytically and using STAN.

Day 2 will further extend on practical model implementation in Stan, guiding participants through the process of building, fitting, and interpreting models. Exercises will cover essential topics such as convergence diagnostics, parameterization strategies, prior specification, hypothesis testing, and model comparison. We will work primarily with the R packages **rstan**, **cmdstanr**, and **brms**.

By the end of the workshop, participants will have a solid understanding of Bayesian reasoning and a working knowledge of implementing Bayesian models in R and Stan.

Credit: 2 workshop days