

MCMC Convergence and Tessellation Budget Sensitivity in the AddiVortes Model

Lewis Maltby

Durham University

lewis.b.maltby@durham.ac.uk



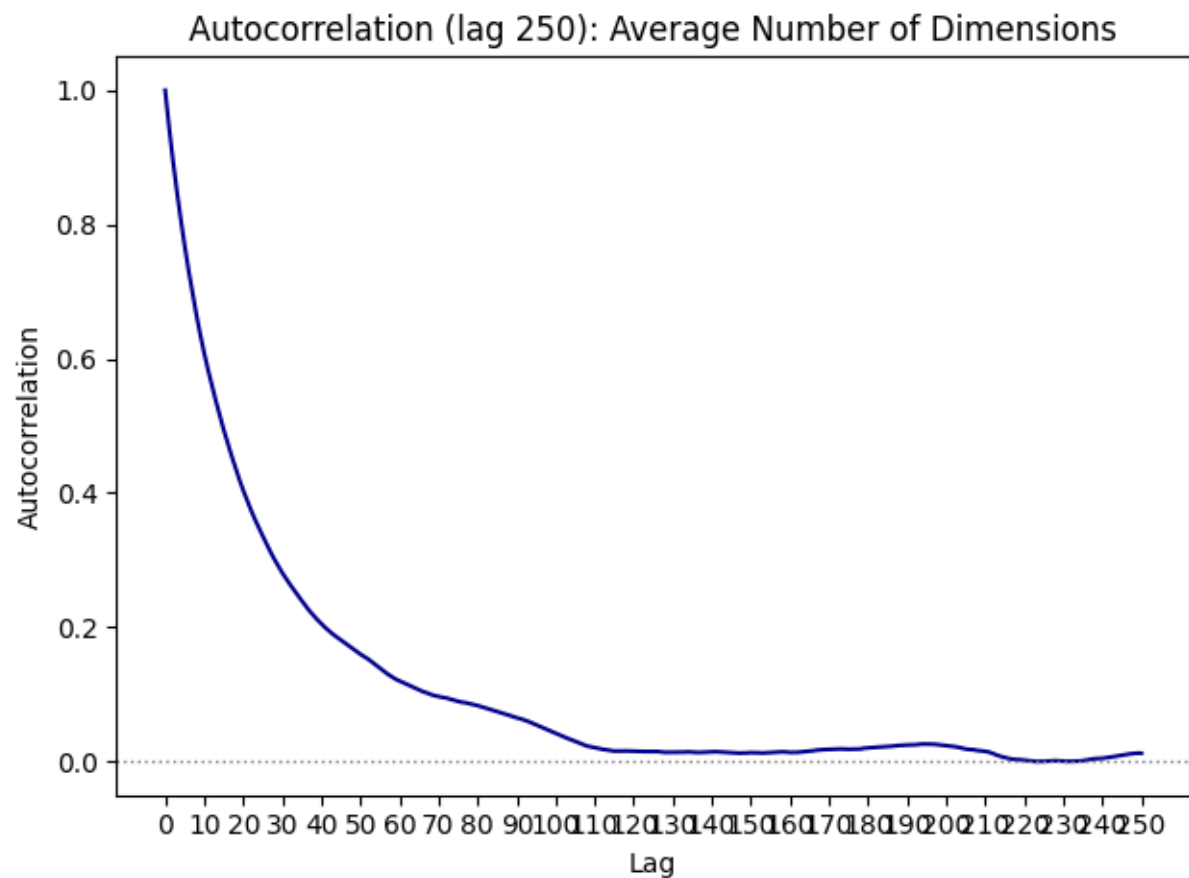
What is the AddiVortex model?

What do we mean by MCMC convergence?

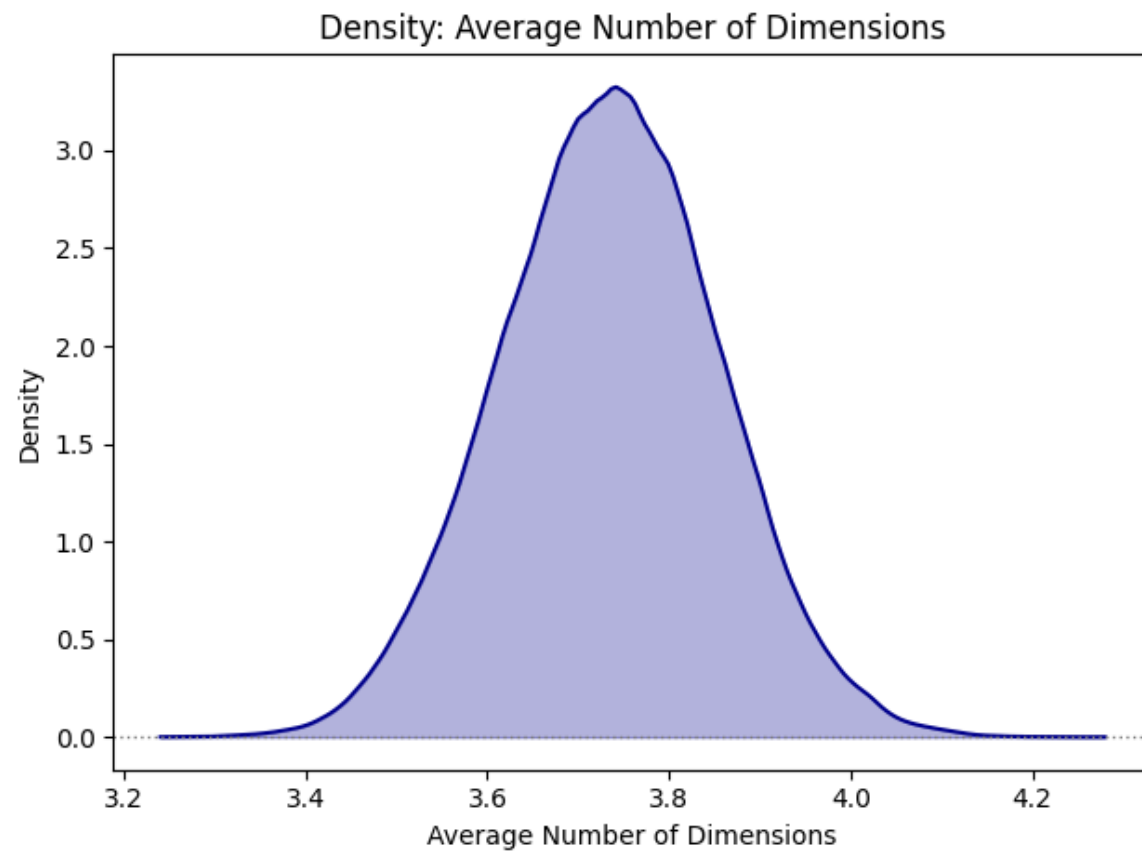
What do we mean by tessellation budget sensitivity?

Why is this important?

Benchmarking



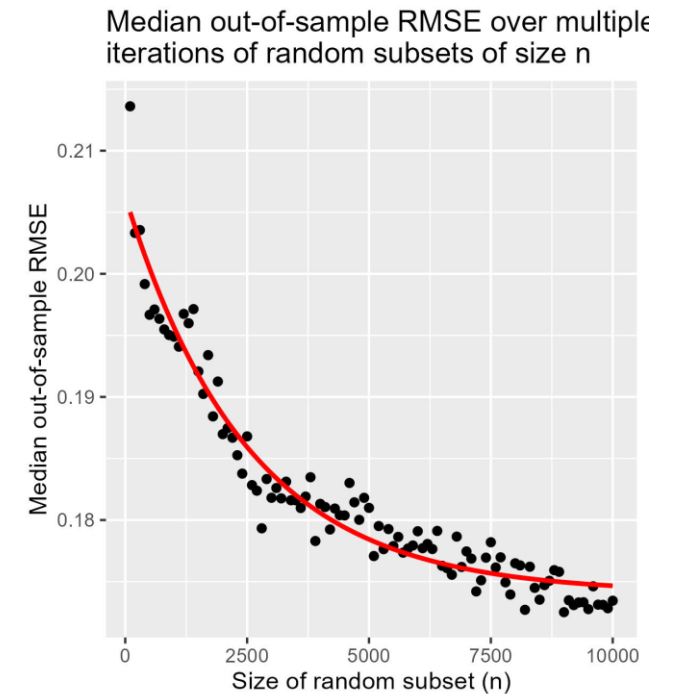
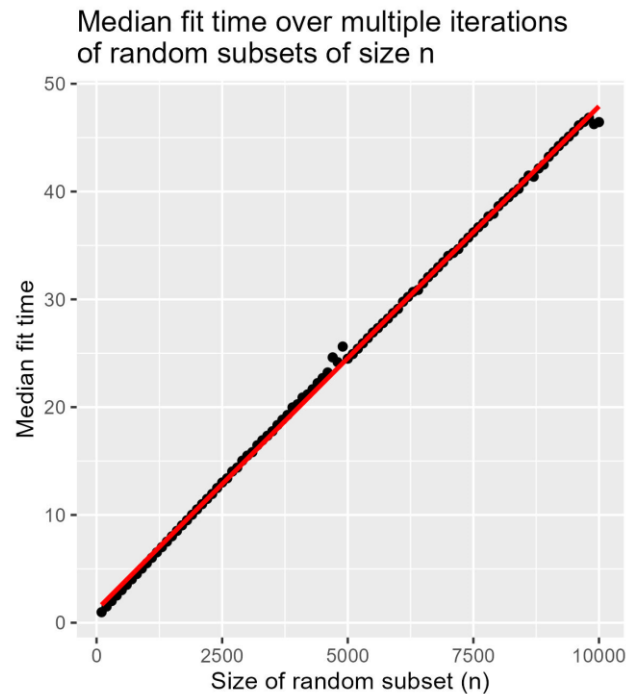
Convergence



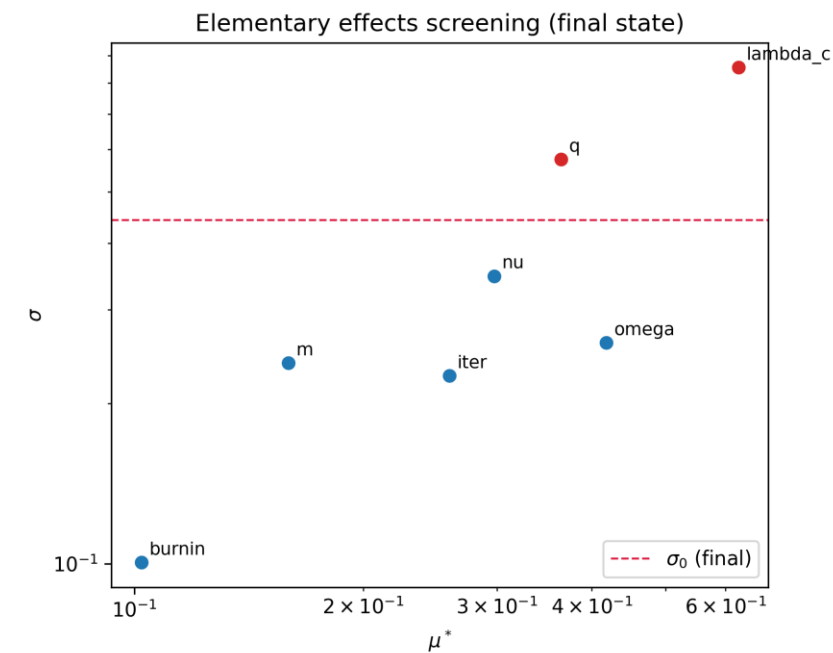
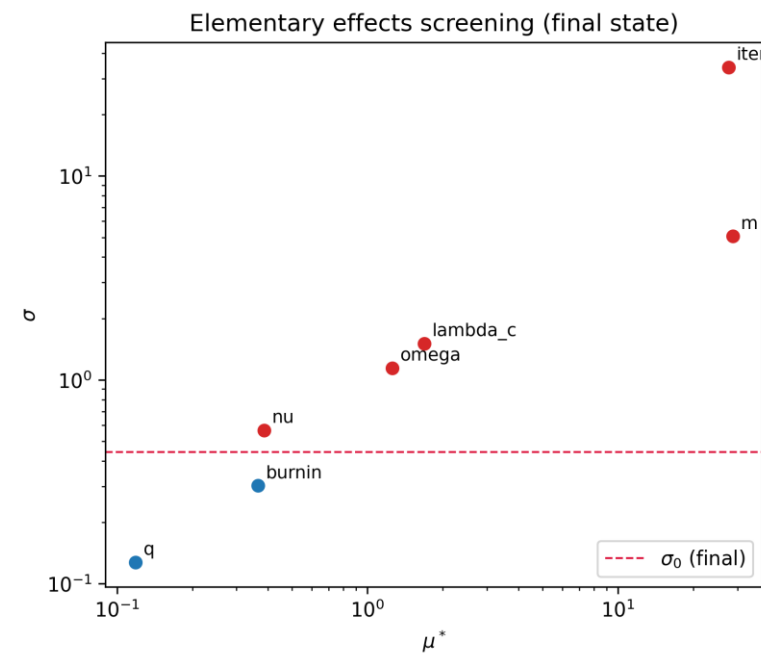
Earthquakes dataset

Stage	Rows	Columns
Raw extract	20,000	19
After filtering to <code>type == "earthquake"</code>	19,841	19
After dropping redundant columns	19,841	14
After dropping incomplete rows	18,732	14
After subsetting to <code>magType == "mb"</code> and <code>status == "reviewed"</code>	11,697	14
After dropping constant <code>magType</code> , <code>status</code> , and <code>net</code> columns	11,697	11

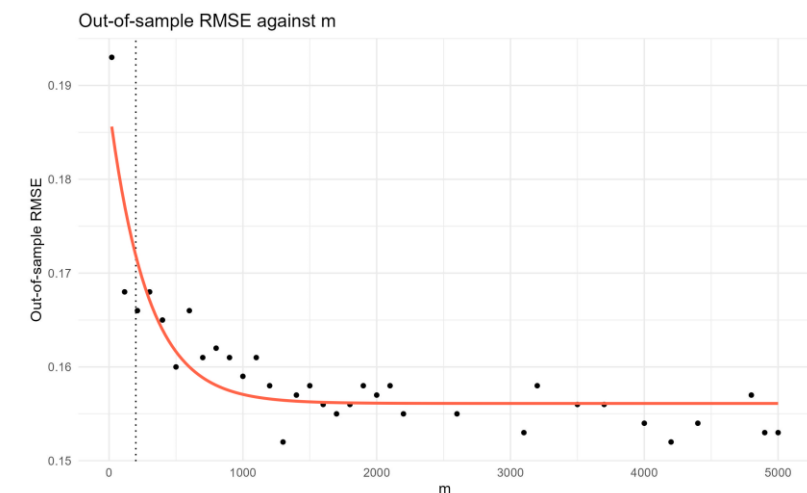
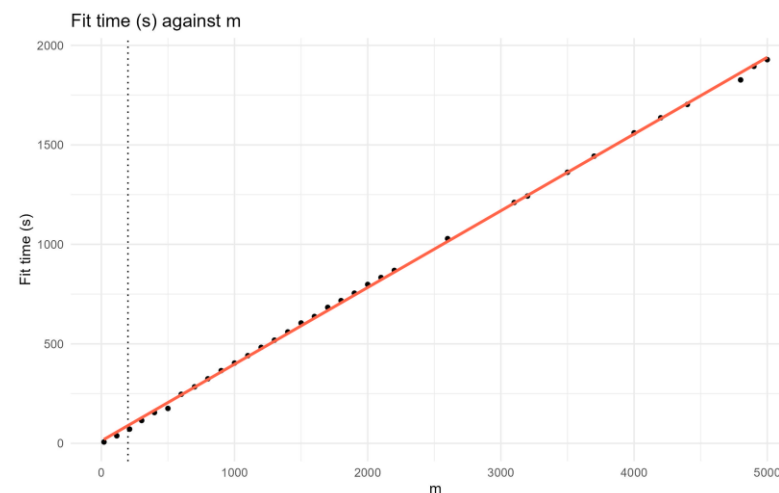
Dataset size



Parameter screening



Local effects



Results and further work

- Changes in parameter defaults
- Algorithm optimisation
- Convergence diagnostics tools
- Earthquakes dataset
- Better understanding of how key metrics respond to parameter tuning and size of dataset
- Screening code, further usage