

## Bilateral SFB-Workshop on LMMs and GAMs

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### Workshop outline

The workshop will take place over three days. The first two days focus on the theory and practice of linear and generalised mixed effects models. The third day will be run as a data surgery and we will discuss problems that you have encountered in your own data. There's a firm plan for the structure of the first two days, but we can work out the best format for the third day together.

#### *Monday*

##### **10:00–11:15** *Theory session*

- Linear and generalised regression models
- Specifying & interpreting interactions
- Residuals
- Model comparisons & Information criteria

##### **11:15–11:30** *Coffee break*

##### **11:30–13:00** *Practical session*

- Fitting models to continuous and binary data
- Summarising & visualising predictions
- Evaluating significance

##### **13:00–14:00** *Lunch break*

##### **14:00–15:15** *Theory session*

- Why go mixed?
- Random intercepts and slopes
- Unbalanced samples & shrinkage
- Maximal vs. parsimonious random effects

##### **15:15–15:30** *Coffee break*

##### **15:30–17:00** *Practical session*

- Fitting, visualising and interpreting mixed models
- Getting random effects right
- Convergence

*Tuesday*

**10:00–11:15** *Theory session*

What are GAMs?

Smooth terms, basis functions and the smoothing penalty

Autocorrelation

**11:15–11:30** *Coffee break*

**11:30–13:00** *Practical session*

Fitting simple GAMs to formant trajectories and pitch data

Visualising predictions

Evaluating significance

**13:00–14:00** *Lunch break*

**14:00–15:15** *Becoming a GAMM warrior*

Random smooths

Dealing with autocorrelation

**15:15–15:30** *Coffee break*

**15:30–17:00** *Practical session*

Working with random smooths & autocorrelation parameters

Some further tricks of the trade

*Wednesday*

**10:00–13:00** *Data surgery*

Answering questions about LMERS and GAM(M)s

How do I fit these models to my own data?

Where can I find help?