



Measuring the 24-hour human exposome

Measuring and comparing environmental exposures across the day.

Tübingen / Munich / Remote · English · Master's thesis · Research internship · Erasmus+ research placement · Engineering project

The question

Our days involve changing light, activity and other environmental conditions. How can we describe these exposures together, without losing their timing or the uncertainty in the measurements?

The project

Develop reproducible ways to work with time-resolved environmental and behavioural measurements. The focus is on making streams of observations comparable and interpretable, rather than treating a whole day as a single average. Available data and sensors will determine the final scope.

What you will do

- Review relevant exposure measures and the limitations of wearable sensing.
- Build documented workflows for aligning data, detecting missingness and checking measurement quality.
- Evaluate summaries or visualisations that preserve meaningful daily patterns.

Possible scope

A thesis could compare measurement or analysis approaches. An engineering project or shorter placement could deliver a validated workflow for one sensor or data stream. Programming and comfort with quantitative data are especially useful.

Suitable backgrounds

Health science · Epidemiology · Engineering · Data science · Public health

General expectations

You should be able to analyse data in R or Python, use Git and GitHub, and work reproducibly. Independent reading, careful documentation and increasing responsibility are expected. Previous sleep or circadian research experience is not generally required.

Funding

No salary or stipend from the research group unless explicitly stated. Master's theses are generally unpaid. Mention external funding or mobility programmes when applying.

Suggested backgrounds are not formal programme approval. Confirm requirements with your home institution.

How to apply

Send a short motivation, CV, relevant skills, preferred project, dates, format and location. Mention external funding. Contact Prof. Manuel Spitschan using the address below.

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