



Händel Seminar May 9-10, 2019

Time Series Analysis in Epidemiology

How do sleep disturbances in humans affect health? How can we identify and characterize relevant patterns during sleep using biomedical recordings? The seminar will provide an introduction to time series analysis in epidemiology with focus on applications in sleep and chronobiology.

In many sub-disciplines of epidemiology, exposure or aggregate outcomes and bio-signals are measured over time, resulting in time series. For example, specific phenomena like human sleep generate long-term data recordings (ECG, respiration, accelerometry) with changing patterns that have to be computationally characterized and classified for cohort studies.

The seminar with six lectures and three embedded practical tutorials (using the computer software R) will enable epidemiologists and other interested researchers to perform several steps in signal analysis and classification. Epidemiological interpretations of the results in highly relevant current research foci will also be addressed.

Program

Thursday, May 9, 2019

10:30 Coffee break / welcome

11:00 Prof. Thomas Penzel (Berlin): Heart rate variability and long-term correlations during sleep

11:45 Dr. Ronny Bartsch (Tel Aviv): Transitions in physiological coupling and network interactions during sleep

12:30 Lunch break

13:30 PD Dr. Frank Pillmann (Halle): Periodic and quasi-periodic processes during sleep (tbc)

14:15 PD Dr. Jan Kantelhardt (Halle): Methods of time series analysis: trends, correlations, periodicities, and spectra

15:00 Coffee break

15:15 Tutorial 1 (J. Zschocke, J. Kantelhardt): Monivariate time series analysis in R

16:45 Coffee break

17:00 Tutorial 2 (J. Zschocke, R. Bartsch, J. Kantelhardt): Bivariate time series analysis in R

18:00 Break

18:30 Dinner

Friday, May 10, 2019

9:00 Dr. András Szentkirályi (Münster): Periodic leg movements during sleep (tbc)

9:45 Dr. Eva Winnebeck (Munich): Movement rhythms as a window into sleep physiology: studying human sleep in real life and large numbers

10:30 Coffee break

11:00 Tutorial 3 (A. Graf, T. Penzel, J. Kantelhardt): Analysis of long-term accelerometer data in R

12:30 Closing

Händel Seminars in Epidemiology

The seminar series will continue the tradition of the Händel School of Modern Epidemiology initiated by Prof. Stang in Halle (Saale) in a different format. We address research questions of modern epidemiology from a methodological perspective.

Our target group are doctoral students and junior postdocs, but also experienced researchers can find specific topics of interest. We embrace interdisciplinary cooperation and hope to provide input for a broad spectrum of research areas. Those attending can vote on the topics to be covered in future *Händel Seminars*.

Prof. Dr. Rafael Mikolajczyk

PD Dr. Jan Kantelhardt

Venue:

Institute of Medical Epidemiology, Biometry and Informatics

Martin-Luther-University Halle-Wittenberg

Magdeburger Str. 8, 06112 Halle (Saale)

Website: www.medizin.uni-halle.de/imebi

Costs: Seminar fee is 150€(reduced fee of 50€is applicable to PhD students)

Registration:

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