Course title:

Nonlinear Methods for Analyzing Complex Behaviour in the Behavioral Sciences

Duration [number of hours]: 15

PhD Program [MERC/MPS/SPACE]: MERC

Name and Contact Details of Lecturer(s):

Michael Richardson

Lecture timetable (CEST hours)

- Tuesday, June 13, from 10 to 13, Classroom 4, SSM
- Wednesday, June 14, from 14 to 17, Classroom 4, SSM
- Thursday, June 15, from 10 to 13, Classroom 4, SSM
- Tuesday, June 20, from 10 to 13, Classroom 4, SSM
- Wednesday, June 21, from 14 to 17, Classroom 4, SSM

Broadcast on Zoom:
https://us02web.zoom.us/j/2878746666?pwd=WElleXJVeExjVVR4WERxdU1YNIRqZz09
Meeting ID: 287 874 6666
Passcode: merc_zoom

Course Description [max 150 words]:

A practical overview of the nonlinear analysis and time-series methods that can be employed to uncover the dynamics of complex behavioral processes, with particular focus on biological and human behavior. The class includes a mixture of lecture and in-class exercises to provide students with the necessary skills to employ the methods for their own research. The course requires that students have access to MATLAB (2019 or newer).

Syllabus [itemized list of course topics]:

- Class 1: Introduction to Nonlinear Methods and Time-Series Data
- Class 2: Fractal Methods
- Class 3: Phase Space Reconstruction and Recurrence Methods I
- Class 4: Recurrence Methods II
- Class 5: Other Methods, Application and Data Collection for Analysis Project

Each class is 3 hours (total of 15 hours). Dates to be announced.

Assessment [form of assessment, e.g. final written/oral exam, solutions of problems during the course, final project to be handed-in etc]:


Suggested reading and online resources:

Readings and Resources (software and example data) will be available at:

https://xkiwilabs.com/nonlinearmethods/