CENTRE FOR **STOCHASTIC GEOMETRY** AND ADVANCED **BIOIMAGING**

MINDLab

Summer Camp

on Analysing Spatial Point Patterns

1 – 5 June 2011, Sandbjerg Estate, Sønderborg

Scope of the Course

Data which record the spatial locations of events (such as crimes, disease cases, meteorite impacts) or objects (trees, nests, galaxies, cells) can be regarded as spatial patterns of points. This course presents statistical methodology for analysing spatial point patterns, and its practical implementation in the statistical package R. In the course, we will learn to use 'spatstat', an add-on library for spatial statistics in R.

The course will feature theoretical presentations, software demonstrations and hands-on practical exercises. Participants should bring a laptop for the exercises.

Topics covered include:

- statistical formulation and methodological issues
- data input and handling
- exploratory analysis
- nonparametric intensity estimation
- distance methods and summary statistics such as Ripley's K function
- point process models (Poisson, Gibbs, Cox, cluster)
- likelihood, pseudolikelihood and Bayesian inference
- model validation
- simulation techniques
- multitype and marked point patterns
- inhomogeneous point processes

Teachers:

Adrian Baddeley (Perth), **Yongtao Guan** (Yale), **Ute Hahn** (Aarhus), **Jakob Gulddahl Rasmussen** (Aalborg), **Ege Rubak** (Aalborg), **Rasmus Waagepetersen** (Aalborg)

For further information please see the homepage: www.csgb.dk

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