

Investigation of complex human travel patterns as a basis for epidemic modeling

Initiative: Modellierung und Simulation komplexer Systeme (beendet)

Ausschreibung: Fellowships "Computational Sciences"

Bewilligung: 18.04.2010

Laufzeit: 3 Jahre

Human mobility is a key factor for the spatial spread of human infectious diseases. Despite a lot of work on projects in epidemiological modeling there are still open challenges concerning the explicit incorporation of human travel into these models. As shown in previous work, human mobility shows complex, however universal and regular patterns such as long-range displacements and recurrent bidirectional travel between a few most preferred locations. Starting point for this fellowship is a recently developed theoretical bidirectional model for human epidemics. This model will be extended and validated by a large empirical data set on human mobility acquired by mobile phone and smart card tracking. Building upon these data the ultimate goal is to realize a simulation platform providing us with guidelines for the mitigation of human epidemics. The first phase of the fellowship is spent at the Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge/USA, before returning to Germany.

Projektbeteiligte

Dr. Vitaly Belik

Max-Planck-Institut für Dynamik und
Selbstorganisation
Abteilung für Nichtlineare Dynamik
Göttingen