MA07-030 - Elucidating spatio-temporal coherence of cellular processes by data-driven inverse analysis: redox rhythmicity in yeast and diffusion controlled hormone feedback cycles

Zusammenfassung

Perhaps the major goal in systems biology is the elucidation of cellular processes. Its pursuit requires the joint efforts of computational, applied mathematicians, experimental biologists and engineers. Advanced mathematical techniques from the fields of nonlinear, inverse and ill-posed problems, are necessary for extracting the desired information about complex cellu-lar processes from the ever increasing datasets avaliable. In this project we plan to develop data-driven inverse methods then apply these to analyse redox phenomena in yeast respira-tory oscillation, diffusion controlled cortisol feedback cycles and circadian regulation of cyanobacterial photosynthesis.

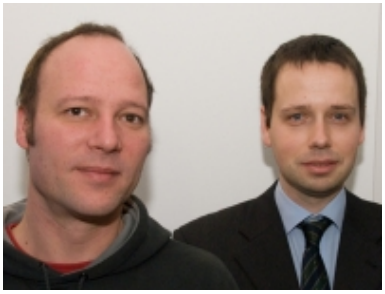
Schlagworte:
Systems biology, experimental high throughput data, nonlinearill-posed and inverse problems, regularization methods, inversebifurcation analysis, parameter identification, respiratory oscillations ofyeast, large scale ODEs, hormone regulation, react

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Institution: RICAM and Johannes Kepler University

Co-Principal Investigator(s): Christoph Flamm (University of Vienna)



Status: Abgeschlossen (01.03.2008 – 31.08.2010)

Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://wwtf.at/funding/programmes/past/ma/MA07-030/