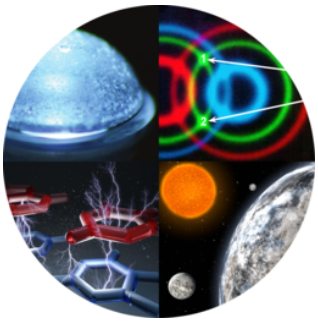

Münchner Physik-Kolloquium

Sommer 2019

Dynamics of reaction networks

Prof. Dr. Bernold Fiedler, *Freie Universität Berlin*

Monday, 13 May 2019, 17:15 h
Hörsaal 2, Physik-Department der TUM, James-Franck-Straße 1, Garching

We present some attempts to understand the dynamics of chemical, metabolic, or gene regulatory networks, based on graph theoretic structures of the network, only. We describe steady state sensitivity to perturbed reaction rates. We provide sufficient conditions for sustained temporal oscillations. We also show how the concept of determining nodes (Foias, Temam) coincides with the notion of feedback vertex sets from graph theory. As a result we can determine, and control, the long-time dynamics of entire networks from observations on a feedback vertex set, only.

Examples of our mathematical analysis include the citric acid cycle, genetic circadian clocks in mammals, and early Ascidian embryogenesis.

Student event: Meet the speaker

*We invite you to a **student-only** discussion-round with Prof. Dr. Bernold Fiedler before his Munich Physics Colloquium talk.*

Be curious and feel free to ask any question.

Monday, 13 May 2019, 16:00 h
Seminar room PH 3268 (upper floor), Physik-Department der TUM, James-Franck-Straße 1, Garching