Eugene Wigner Colloquium

joint event of GRK 1558 and SFB 910

SFB 910

Prof. David S. Citrin

Georgia Institute of Technology, Atlanta, USA

"Chaos in External-Cavity Semiconductor Lasers"

By placing a mirror in front of a semiconductor laser diode, one can induce a rich variety of complex dynamics depending on the operating parameters of the system. Such external-cavity semiconductor lasers are of interest as they are a model system for high-dimensional chaos in addition to exhibiting fast dynamics on the sub-nanosecond timescale. This later property makes external-cavity semiconductor lasers of interest for a range of high-speed applications in communications and computing. In this talk, I discuss our experimental investigations of the sequence of dynamical regimes or the bifurcation cascade, though which an external-cavity semiconductor laser passes as the feedback strength varies. We unambiguously identify key bifurcations and obtain an understanding of the bifurcation cascade based on the system dynamics. In addition, I discuss some recent applications of such systems for ultrahigh rate random-bit generation.

K. Lüdge, A. Knorr

GRK1558 research training group

Thursday, 29.01.15 · 16:15h · EW 202

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