



## Berlin Center for Studies of Complex Chemical Systems e. V.

Fritz-Haber-Institut der Max-Planck-Gesellschaft, Humboldt-Universität,  
Max-Delbrück-Centrum für Molekulare Medizin, Otto-von-Guericke-Universität  
Magdeburg, Physikalisch-Technische Bundesanstalt, Technische Universität  
Berlin, Universität Potsdam

### Seminar

#### Complex Nonlinear Processes in Chemistry and Biology

Honorary Chairman: **G. Ertl**

Organizers: M. Bär, C. Beta, H. Engel, M. Falcke, M. J. B. Hauser, A.  
S. Mikhailov, P. Plath, L. Schimansky-Geier, H. Stark, J. Kurths

Friday, 18th November 2011, 16:00 s.t.

#### **Dr. Rainer Feistel**

**Leibniz-Institute for Baltic Sea Research, Rostock**

#### **Simple physical models and hypotheses for Earth's climate**

##### Abstract

The recently observed global warming is commonly blamed to the greenhouse effect caused by anthropogenic  $CO_2$  emissions. More than a century ago, the greenhouse model was suggested by Arrhenius as an explanation for the mismatch between observed terrestrial surface temperatures and the cosmic thermal radiation balance.

Simple thermodynamic models for the global energy and entropy balance are discussed with particular emphasis on the role of water in the climate system. It is concluded that Arrhenius' steady-state greenhouse balance implies unreasonable consequences, and that the climate attractor must be chaotic rather than quasi-stationary. The hypothesis is brought forward that the mysterious global stability of terrestrial climate is a result of the bimodal hypsographic distribution of Earth's crust.

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