TECHNISCHE UNIVERSITÄT DRESDEN

Zentrum für Informationsdienste und Hochleistungsrechnen

EINLADUNG

zum

ZIH-SEMINAR

Titel: **Evolution of a RNA Cooperation on the Rocks**

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Kurzfassung:
The appearance of cooperative interaction between self-replicating molecules constitutes the first major transition in the molecular evolution towards the earliest forms of life (Maynard-Smith, Szathmáry 1995). Although several ecological models for stable molecular coexistence have been proposed (Eigen, Schuster 1977; Czaran, Szathmáry 2000), the evolutionary route towards catalytic cooperation in an RNA world (Gilbert 1986, Joyce 2002) remains unclear. Firstly, we face the problem of the discovery and fixation of highly specific ribozymes (RNA enzymes) from an enormous sequence space. Secondly, a stable cooperative pathway should be established that allows for progressively elongation.
Using a simulated RNA-like replicator system, we show that a simple autocatalytic metabolic pathway between molecular replicators can occur spontaneously, given their adsorption on a (mineral) surface and the high degree of neutrality in RNA evolution (Schuster et al. 1994). Moreover, we find the progressive elongation of the pathway can occur in forward or retrograde (Horowitz, 1945) fashion, depending on assumptions about the geography of prebiotic evolution.

Ort: **Informatik-Neubau, Nöthnitzer Str. 46, Raum INF 1096**

Zeit: **Mittwoch, 1. Oktober 2008, 14:00 Uhr**

gez. Prof. Dr. Wolfgang E. Nagel