

## Informatikkolloquium

Im Rahmen der Kolloquiumsveranstaltungen des Instituts für Informatik wird

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einen Vortrag zu folgendem Thema halten:

### **Eliminating the nondeterminism from two-way finite automata**

Alle Mitglieder des Fachbereichs sind hierzu herzlich eingeladen. Der Vortrag findet statt  
am

**Dienstag, den 11. Dezember 2007 um 10 Uhr c.t.**  
**im Magnus-Hörsaal**

#### **Abstract**

It is well-known that two-way nondeterministic finite automata have the same recognizing power as one-way deterministic automata, i.e., they characterize the class of regular languages. However, the cost of the elimination of the nondeterminism from two-way automata is still unknown. More precisely, in 1978, Sakoda and Sipser posed the question of the cost (in terms of states) of turning two-way nondeterministic finite automata into equivalent two-way deterministic automata, and they conjectured that such a cost is exponential.

In the first part of this talk, we present this open question and we discuss some related results. Subsequently, we consider the unary restriction of the question, i.e., the restriction to the case of automata with a one letter input alphabet. For this case, we will present a subexponential simulation of two-way nondeterministic automata by two-way deterministic automata. The problem of the optimality of this simulation is open.

Gastgeber: Dr. Andreas Malcher und Prof. Dr. Detlef Wotschke