TECHNISCHE UNIVERSITÄT
ILMENAU

FAKULTÄT FÜR INFORMATIK UND AUTOMATISIERUNG
INSTITUT FÜR THEORETISCHE INFORMATIK

INSTITUTSSEMINAR

Am Donnerstag, dem **15. Dezember 2016**, spricht um **11:00 Uhr** im Raum **Z 2073**

Herr Prof. Dr. Martin Dietzfelbinger

zum Thema:

"Quicksort with two or more pivots: Optimal strategy, exact analysis"

Zusammenfassung:

Quicksort is a venerable sorting algorithm, it is taught in basic algorithms classes, and it is routinely used in practice. Can there be anything new about Quicksort today? Dual-pivot quicksort refers to variants of classical quicksort where in the partitioning step two pivots are used to split the input into three segments. Algorithms of this type received quite some attention starting from 2009, when a dual-pivot algorithm due to Yaroslavskiy, Bentley, and Bloch replaced the well-engineered quicksort algorithm in Oracle's Java 7 runtime library. An analysis by Nebel and Wild from 2012 gave 1.9 n ln n comparisons on average for n input numbers. (Other works ensued.) We consider a model that captures all dual-pivot methods, give a general analysis and identify an algorithm with the minimum average number of key comparisons (which is 1.8 n ln n (= 2.38n log_2 n + O(log n)). The expected number of comparisons can even be determined exactly. We also comment on the more general situation when k > 2 pivots are used, and on other performance measures than comparisons.

(Based on joint work with Martin Aumüller, Daniel Krenn, Clemens Heuberger, and Helmut Prodinger)

Alle Interessenten sind herzlich eingeladen.

Univ.-Prof. Dr. Dietrich Kuske

Ilmenau, 30.11.2016