Einladung zum

MATHEMATISCHEN KOLLOQUIUM

Am Dienstag, dem 07.11.2006

spricht

Prof. Dr. Ken Duffy

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über

The likelihood of rare events in packet queues

Abstract: In IP networks, such as the Internet, packets of data are of variable size. When they arrive at a router, they are queued before being forwarded. Interestingly, although the period of time a packet takes to be transmitted is a function of its size, for engineering reasons the buffer space at routers is typically determined by a number of packets. If a packet arrives when the buffer space is fully occupied, it is lost. In a system that is well behaved, these losses should be unlikely.

In this talk we will use functional large deviation theory to analyse the behaviour of a packet queue. We determine logarithmic asymptotics for the likelihood of long waiting times and large queue lengths, and the most likely path to these rare events. For illustrative purposes, predictions will be compared with empirical data.

The probability of these rare events is related to the large deviations rate functions of the stochastic packet sizes and inter-arrival times. If there is time, we will introduce a non-parametric estimator for these rate functions and prove that the estimator itself inherit the large deviation principle. This suggests a mechanism for using these abstract results in practice. Mathematical challenges which remain will be highlighted.

Der Vortrag findet statt um 17 Uhr c.t. im Raum 7260, 7. Ebene des Mehrzweckhochhauses (MZH) der Universität Bremen, Bibliothekstraße.
Zuvor gibt es Kaffee/Tee und Gebäck im Raum 7140.

Alle Interessierten sind herzlich eingeladen.
Marc Keßeböhmer als Kolloquiumsbeauftragter.