RELIABLE DATA ACQUISITION — SPECTROSCOPY WITH REAL-TIME LINUX

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Todays standard personal computer are quite powerful and are commonly used as data acquisition systems in spectroscopy laboratories. On the other hand comparatively expensive special purpose hardware — sometimes also software — is often used to perform the critical tasks of data acquisition.

Here a novel implementation of a spectroscopic data acquisition system using the *Real-Time* Linux[a] operating system is presented. This extension to the standard Linux/GNU desktop operating systems provides an environment for applications with hard *real-time* constraints.

The capabilities of *Real-Time* Linux are introduced and the design and implementation of *real-time* data acquisition systems on that basis is described. Especially the overall design and the corresponding communication paths as well as the hardware driver development are explained. Examples from the implementations of our data acquisition system for a high resolution laser spectrometer are discussed[b] .

[a] V. Yodaiken and M. Barabanov, *Real-Time Linux*, technical report, Department of Computer Science, Institute of Mining and Technology, Socorro, NM, USA.

[b] Results from the spectrometer are presented in another talk at the symposium: Jochen Küpper, Arnim Westphal, Michael Schmitt and Karl Kleinermanns: High resolution electronic spectroscopy of phenol-methanol.