



B 16

**The NA48 LKr Calorimeter Digitizer Electronics**

B. Hallgren<sup>a</sup>, F. Bal<sup>a</sup>, G. Barr<sup>a</sup>, P. Buchholz<sup>b</sup>, A. Ceccucci<sup>a</sup>, F. Formenti<sup>a</sup>,  
W. Funk<sup>a</sup>, A. Gianoli<sup>a</sup>, Yu. Kozhevnikov<sup>c</sup>, A. Lacourt<sup>a</sup>, G. Laverrière<sup>a</sup>,  
A. Papi<sup>d</sup>, M. Martini<sup>e</sup>, M. Sozzi<sup>b</sup>, O. Vossnack<sup>a</sup>, and H. Wahl<sup>a</sup>

<sup>a</sup>*CERN, Geneva, Switzerland*

<sup>b</sup>*Universität Dortmund, Dortmund, Germany*

<sup>c</sup>*Joint Institut for Nuclear Research Dubna, Moscow, Russia*

<sup>d</sup>*Univ. degli Studi di Perugia, Perugia, Italy*

<sup>e</sup>*Dipartimento di Fisica, Univ. degli Studi di Ferrara, Ferrara, Italy*

<sup>f</sup>*INFN, S.Piero a Grado, Pisa, Italy*

The 13500 channels of the NA48 liquid krypton electromagnetic calorimeter read-out digitizer electronics have been put in operation in 1997. The digitizer electronics employs a gain switching technique, which expands the dynamic range of a standard 10-bit ADC to 14 bits at 40 MHz sampling rate with the help of a custom developed integrated circuit (KRYPTON). The KRYPTON is a mixed analogue/digital integrated circuit, which contains the necessary functions for signal processing such as a 9-pole 10 MHz Bessel filter and four amplifiers with a multiplexer to drive the ADC combined with fast digital circuits to determine the signal amplitude. Additional functions integrated on the chip are a programmable trigger circuit for the NA48 neutral trigger and serial control circuits. The KRYPTON has been fabricated in 1.2  $\mu\text{m}$  BiCMOS technology and was successfully developed together with industry in a remarkably short time. The achieved performance and the experience from the first year of the operation of the liquid krypton calorimeter electronics will also be briefly discussed.