



Contribution ID: 65

Type: **Contributed Talk**

## **The neutron response of a Pb-scintillating fiber sampling calorimeter: Monte Carlo simulation and experimental validation**

*Thursday 22 February 2007 11:30 (20 minutes)*

The KLOE Pb-scintillating fiber calorimeter, primarily designed as an electromagnetic calorimeter, showed a superior neutron efficiency in a measurement performed in the energy range [20,180] MeV at TSL (The Svedberg Laboratory, Uppsala) presented in a parallel contribution to this conference. A detailed simulation of the calorimeter - a complex geometrical structure of 200 layers of thin (0.5 mm) grooved lead foils and 1 mm diameter scintillating fibers glued inside - and of the main elements of the TSL beamline has been performed with the Monte Carlo code FLUKA. The simulated response of the calorimeter to neutrons, together with the experimental validation by the TSL data, is presented, showing a high neutron efficiency, which ranges between 40% and 50%. The reasons of a such enhancement of the efficiency, in comparison with the typical neutron counters, are investigated and discussed, opening to the possibility of a new, innovative neutron detector.

**Primary author:** FERRARI, Anna (CNAO Milano)

**Presenter:** FERRARI, Anna (CNAO Milano)

**Session Classification:** Session 7