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## The ALICE PHOS Calorimeter

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### Summary

The ALICE detector has been designed to study the strongly interacting matter created in nucleus-nucleus collisions at the Large Hadron Collider (LHC). Measurement of direct photons is probing the initial state of the interactions. In the heavy ion collisions program at LHC, it is very critical to measure thermal radiated photons, which is known to carry the temperature information of created hot medium, with very fine energy and position resolution.

The ALICE PHOTon Spectrometer (PHOS) consists of 17920 PWO crystals to each having size of  $22 \times 22 \times 180\text{mm}$  and Avalanche Photo Diode (APD) for readout of scintillation light. First PHOS module consisting of 3584 crystals was constructed and tested by utilizing 2 GeV/c electron beam in the summer of 2006 and cosmic rays in 2007. The HV bias for APDs were calibrated in order to obtain equal gain for better trigger performance. Second PHOS module is under construction and installed for the first p+p collisions at LHC. Further research and development program for improved performance of PHOS as a electro-magnetic calorimeter are under studying.

In this paper, we will present the construction and installation status of the PHOS modules and performance results. In addition, physics potential with the PHOS module during the first physics run of LHC will be discussed.

**Primary author:** Dr TORII, Hisayuki (Hiroshima Univ.)

**Co-author:** FOR THE ALICE-PHOS, Collaborations (CERN)

**Presenter:** Dr TORII, Hisayuki (Hiroshima Univ.)

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