The e391a aims to search for a flavor changing neutral current (FCNC) process, $K_L \rightarrow \pi^0\nu\nu$ decay, which is one of the main decay modes for the CP violation study and very sensitive to new physics beyond the standard model. The experiment is in a stage of detector construction for data taking scheduled on February 2004 for 4 months. As shown in Fig. 1, the detector consists of electromagnetic calorimeter made of pure CsI crystals, barrel veto counters of alternating lead-scintillator laminators and five stages of beam counters.

In FY2002, the downstream section containing the electromagnetic calorimeter was fabricated and tested by using neutral beam. A calibration of the calorimeter and an overall check of electronics system were main purposes of the beam test. By putting a small aluminum target in the beam line, π^0 is produced by interaction with neutrons in the beam. Clean mass peaks of π^0 and η are observed (Fig. 2) and its mass resolution was improved after iterative correction of the CsI response to the gamma. In addition, it deserves a significant progress to detect kaon decays with the same trigger and electronics with that of the real run (Fig. 3). Another important progress is to fabricate modules of the front barrel (Fig. 4). Total number of the modules is 16 and they will be assembled into the front barrel veto.

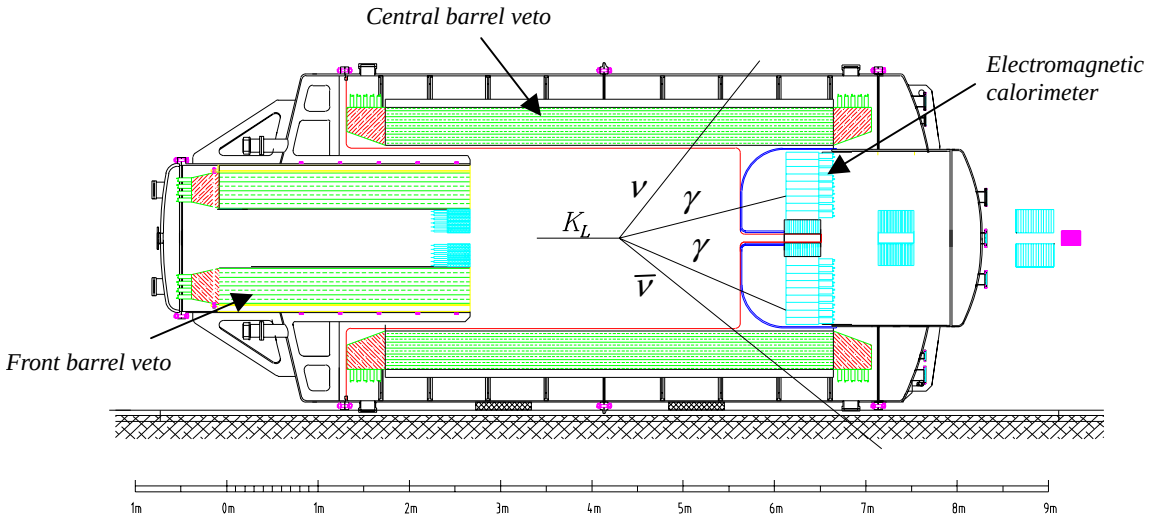

Fig. 1. Schematic view of the E391a detector setup. It consists of electromagnetic calorimeter, barrel veto counters and five stages of beam counters. Most of the detector components are located inside the vacuum chamber.

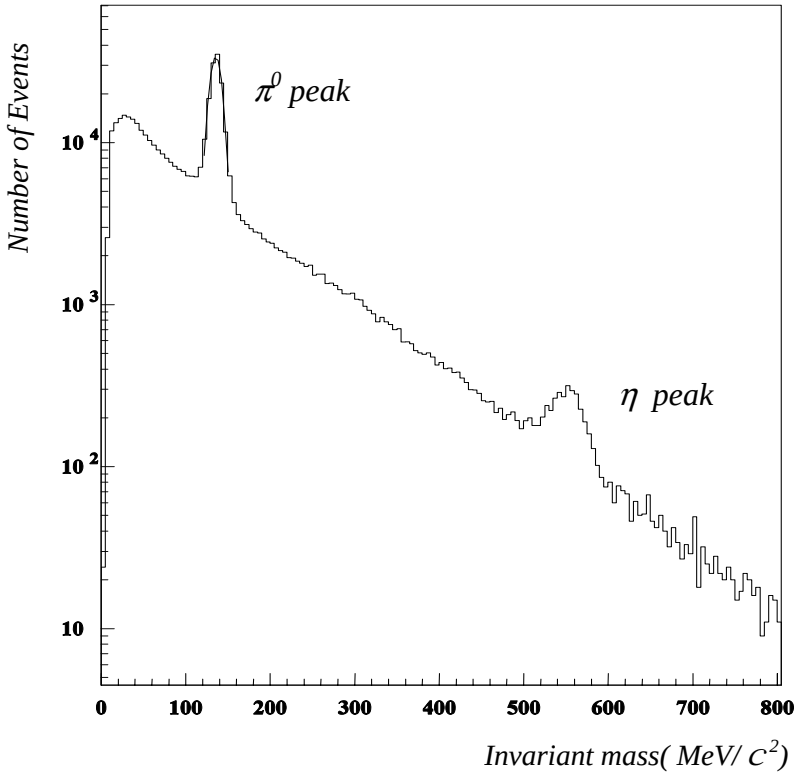

Fig 2. Invariant mass of two gammas assuming that they are produced at the target.

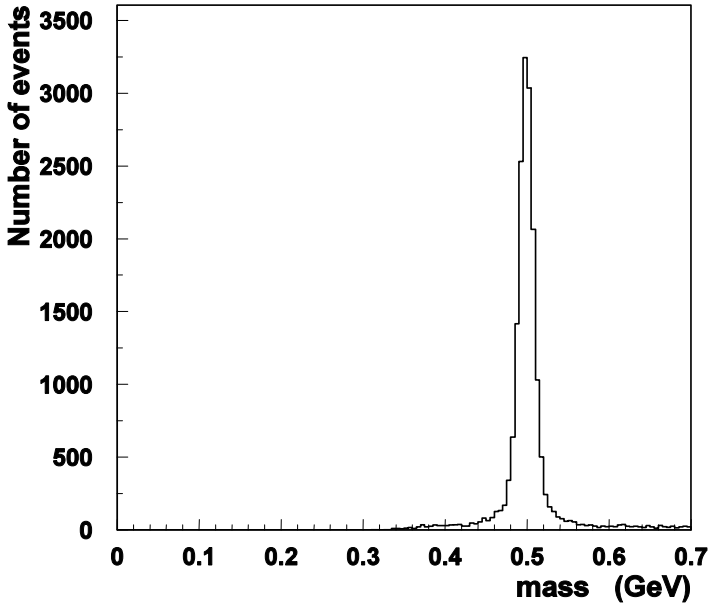

Figure 3. Invariant mass of 6 gammas. A very clean kaon signal was obtained from the $K_{\pi 3}$ ($K_L \rightarrow \pi^0 \pi^0 \pi^0$) decays.

Fig. 4. Fabricated modules of the front barrel. Total number of modules is 16 and they will be assembled into the front barrel veto.