To Office of Experimental Planning and Coordination

Date: 18 December 2001

MACHINE TIME EXECUTION

REPORT (2001-4-2 CYCLE)

Experimental Group	T492	Reporter	Tadashi Nomura (Kyoto University)
Scheduled Period and Shift	2001/12/4-12/16 (shared with T491) 15 shifts	Main, Sub, Para	Para

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SUMMARY OF EXECUTION AND RESULTS

At first, we measured the light yield of our test module, varying the number of Aerogel tiles (4, 2, 0), the refractive index (n=1.03, 1.05) in it. We got somewhat smaller number of photoelectrons than expected, which might be caused by the overestimation of PMT's quantum efficiency.

Next, we examined the incident position dependence of the light yield. The result was reasonably consistent with the MC expectation. Thus we could understand its geometrical acceptance well.

Most important measurements in this experiment were then performed. We plan to construct a photon detector, which is insensitive to neutrons, with these Aerogel modules with Pb sheets. To achieve our goal of the photon efficiency and the neutron insensitivity, the detector will consist of 20 layers of modules along the beam direction and their coincident hits will be required. In this test experiment, we prepared a mini-prototype detector that has two layers with 1 and 3 modules, respectively, and attempted to measure the response to protons whose momentums are below the Cherenkov threshold, which are expected to be similar with the response to neutrons. In a prompt analysis, we found that there were unexpected hits even without the Aerogel tiles. They could be categorized in two groups, one was the unexpected light emission somewhere in the modules, and the other was the unwanted photons/neutrons those came coincidently with the beam. We are still in analysis and are trying to find the source of these unwanted backgrounds.

EXECUTED MACHINE TIME, BEAM CONDITION, DOWN TIME etc.

In cooperation with T491 group, we started the commissioning in the evening on 12/4. Our group took data from 12/5 evening to 12/9 night during 15 shifts in total.

The IT beam intensity tended to decrease during our run down to $(0.5\text{-}0.6)\times10^{11}$ ppp. The machine was well operated except one scheduled down time to examine the NML interlock on 12/5 10:45-11:10.

COMMENTS

There was a burst at the beginning of each spill. It causes some accidental backgrounds in our measurement. A smooth spill structure was better for us, though we didn't request to improve it in this machine time.