

Report of RCNP International Joint Usage/Joint Research		
J015		PI: Masayuki Niiyama
1	Title of reserch	beam test of threshold-type Cherenkov detector for NA61 experiment
2	List of collaborators	M. Niiyama, T. Maruyama, S. Hasegawa, C.D. Shin, F. Ono, A. Kitayama, K. Nishi, N. Funayama, T. Murata
3	Period of research	2023/10/9-2023/10/12
4	Publication list	Articles
		Talks
		Theses
5	Description of the results and outputs	We have developed an aerogel Cherenkov counter with a refractive index of $n=1.03$ for K/p separation in a 3.5 GeV/c beam at the NA61 experiment. The aerogel radiator dimensions are 12 cm x 12 cm x 12 cm. The performance of this counter was tested using positrons at SPring-8/LEPS2 from October 9 to 12, 2023. Performance Evaluation The efficiency and position dependence of the aerogel Cherenkov counter were evaluated. We achieved nearly 100% efficiency using four fine-mesh PMTs. The position dependence of the efficiency was found to be sufficiently small, less than 6%, and the scintillation light from the reflector was minimal. Conclusion Based on the test results, we anticipate an efficiency of 99% for the 3.5 GeV/c kaon beam, meeting the requirements for the NA61 experiment.