# SCITIC for Hyperon-Scattering Experiments

J. Asai[1], T. Kadowaki[1], S. Iwata[1], M. Kurosawa[1], K. Nakai[1], A. Sato[2]
[1] *Department of Physics, Tokyo University of Science, Noda, Chiba 278-8510, Japan*
[2] *Department of Physics, Osaka University, Toyonaka, Osaka, Japan*

A new track detector named SCITIC has been developed and successfully used for a hyperon-proton scattering experiment at KEK-PS. The experiment (KEK E452) was to study spin-dependent interactions of polarized hyperons produced through the ($\pi^+$,$K^+$) reactions with 1.6GeV/c pion beam.
The name SCITIC stands for SCIntillation Track Image Camera. It consists of a scintillator, an optical lens system, Image Intensifier Tubes(IIT) and a CCD camera.(Fig.1a ). When a charged particles passes through the scintillator, photons are emitted along the path and the particle track can be observed as a train of points by the SCITIC. The track image is focussed on the photocathode of IIT with the optical lens, and then amplified with the IIT cascade keeping the two-dimensional information to record with a CCD camera as digital data. The data acquisition can be triggered by an event-selecting signal from a spectrometer, or triggering detectors. The performance of SCITIC is determined by the optical arrangement. Since requirements for the luminosity and the depth of focus were conflicting, optimization between them was necessary. The overall resolution, the dynamic range to cover different particles, the capability of particle identification, etc. were tested to optimize the arrangement for the hyperon-scattering experiment. Shown in Fig. 1b are typical pictures of $\Lambda$, $\Sigma^+$ production and scattering.

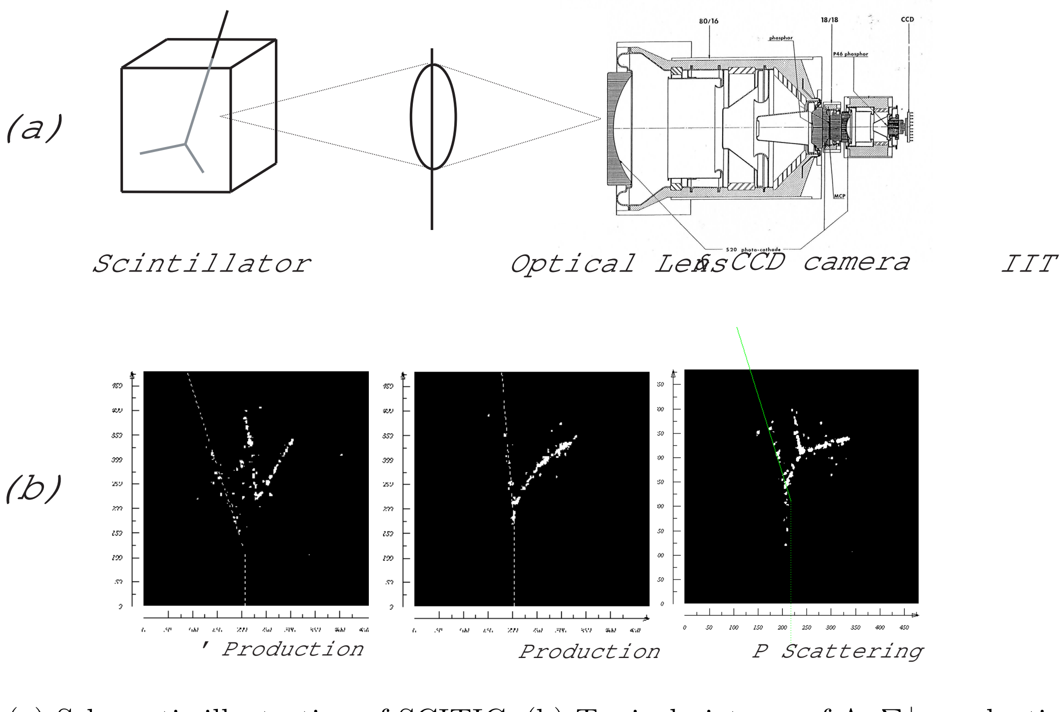


Figure 1: (a) Schematic illustration of SCITIC. (b) Typical pictures of $\Lambda$, $\Sigma^+$ production and scattering.