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Development of TOF detector with ultra-thin Formvar films for astrophysics experiment KENICHI HAMAMOTO, Department of Physics, Kyushu University, K.SAGARA COLLABORATION, K.FUJITA COLLABORATION, H.YAMAGCHI COLLABORATION, N.TAO COLLABORATION, Y.NARIKIYO COLLABORATION — At Kyushu university tandem laboratory, we are measuring ^{4}He (^{12}C, ^{16}O) gamma reaction cross section for the energy range of E_{cm} = 2.4 to 0.7 MeV by detecting ^{16}O recoils. The produced ^{16}O ions are transported to a recoil mass separator where they are separated from the unreacted ^{12}C beam and they are detected by a particle detector placed at focal plane. Since the energy of the produced ^{16}O ions were very low, the detector should have as small a thickness as possible. It is also of importance to have large effective area to collect all ^{16}O ions. To satisfy these requirements, a TOF detector employing micro-channel plates was developed. Special attention was paid to develop an ultra-thin and large area formvar film, which acts as an electron emitter and a cathode electrode. The thickness was estimated to be 4 μg/cm^2 by measuring the energy loss of ^{16}O beam, and the effective area was 80mm in diameter. In this symposium, we will report the method and the result of performance test of the developed TOF detector.

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