spectra measured by CCDs with ^{10}B and ^{6}Li converters. Peaks corresponding to the converted charged particles (see Eq. 1, 2) are seen in the spectra. The peak energy is slightly lower than the converted charged particle energy because of the energy loss in the converter itself. A peak around 0.9 MeV in the energy spectrum for the ^{6}Li converter is caused by tritons which are so energetic that they penetrate through the sensitive volume of the CCD [4]. Tritons emitted in a large incident angle at the surface of the CCD deposit all their energy and stop in the CCD.

To select neutron events, the minimum energy cut is set to 0.3 MeV for the ^{10}B converter and to 0.8 MeV for the ^{6}Li converter. The incident neutron flux is measured with a ^{3}He gas counter with an efficiency greater than 83%. The detection efficiency is measured to be $44.1 \pm 0.7(\text{stat.}) \pm 0.8(\text{syst.})\%$ for the ^{10}B converter and $21.0 \pm 0.8(\text{stat.}) \pm 0.5(\text{syst.})\%$ for the ^{6}Li converter, normalized by the number of neutrons measured by the ^{3}He gas counter. The main source of the systematic error is uncertainty in the initial flux of neutrons. The neutron conversion efficiency for the ^{10}B converter is higher than that for the ^{6}Li as expected from their cross-sections.

4.2. Spatial resolution

The electrons spread over nearby pixels and make a cluster, as shown in Fig. 1. The barycenter of charge is a good estimation of the neutron incident position.

We measure the spatial resolution of the CCD using reference patterns made with a neutron absorber. The reference pattern is placed just in front of the CCD and is irradiated by neutrons. The distance between the reference pattern and the CCD surface is as close as 150 μm.