8th International Workshop on Semiconductor Pixel Detectors for Particles and Imaging.

Contribution ID: **56** Type: **poster**

# Edge Integrity Determination for Assessing Sensor Chip Quality

CERN operates a large hadron collider (LHC) to conduct one of large scale particle physic experiment, namely ALICE. In this experiment, thousand of sensor chips are used to track particle trajectories after the collision events. The sensor chips are mainly installed at Inner Tracking System (ITS) which is located in the centre of LHC. Metrological measurement is performed to satisfy technical specifications of ITS sensor chips. Chip edge integrity is one of physical parameters that need to be measured. The integrity is determined based on edge cutting quality of sensor chip. A vision inspection algorithm is proposed to analyse the integrity parameter. It measures the distance between chip cutting edges and reference lines. Cracking appearances at the area between cutting edges and reference lines will also be considered in quality determination. Gray-scale image of chip edges are automatically analysed to classify chip quality. The images are acquired by a specialised vision system that provide spatial resolution at 0.5 micron per pixel. The measurement is performed for chip edge regions such as horizontal-vertical sides and corner parts. If the measurement results satisfy the required value then the chip will be accepted. Conversely, if the required value cannot be achieved then the chip will not be accepted. The proposed algorithm will be applied to complete a series of physical and electrical chip testing.

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