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## Ultrasonic welding technology for future Straw Trackers and performance studies of small-size tracker prototypes

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Straw Trackers are widely used in High Energy Physics experiments such as ATLAS, LHCb, NA62 and many others. The straw tubes are made of Kapton or Mylar, and have thin walls of several tens of microns. There are two main straw production technologies –glued winding and ultrasonic welding (USW). While the winding technology exists for a long time, and is even available for industrial production, the ultrasonic welding process has reached the required quality relatively recently. The only large scale Straw Tracker build up to now of the welded straws is a part of the NA62 detector. The tracker reliably operates in vacuum for about 10 years, and its extremely good performance makes this technology attractive for future experiments as well.

The improved welding process and strict quality control of produced straws allow to build the modern Straw Trackers of high performance and reliable operation stability. Straw welding technology is considered for the future experiments such as SHiP, DUNE and FCCee. To fulfill requirements of the tracker performance specified by a given experiment, a choice of the straw readout interface and the readout electronics is also an important task of the tracker development.

We present the straw welding process, overview the achievable straw quality and describe the quality control approach established for the straw mass production. We also present recent results on the performance of small-size straw tracker prototypes studied with different readout electronics at the SPS and PS test beam lines at CERN.

### Primary experiment

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