CHARGE-PROJECTION-DETECTOR
for timing at LHC

- Basic Concept:
The time resolution of timing detectors for charged particles is strongly depending on the total charge (energy deposit) created by the charged particle traversing the detector, the intrinsic collection time of the charge in the detector and the detector/system capacity.
The optimization of these parameters can be realized in the charge projection detector.

⇒ To increase the charge, several detectors(*) are placed one after the other and their signals (after time adjustment) are added up
⇒ The development of this detector concept started by TOTEM. The optimization of these parameters are studied with simulations and a test setup.
⇒ The aim is a low material budget timing detector, that can be integrated in the Roman Pot.

(*) Diamond or Si detector with charge creation in single extended bulk and multiple pads or multiples of single planes