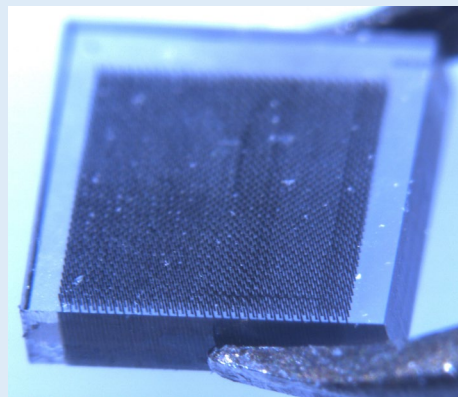
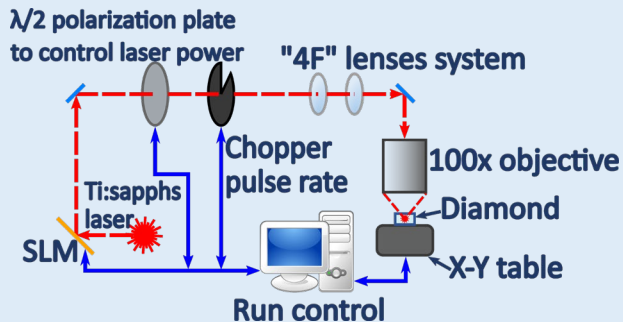


Construction and characterization of high time resolution 3D diamond pixel detectors

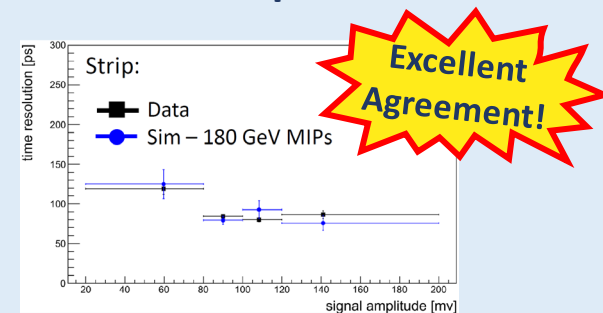
Lucio Anderlini, Marco Bellini, Chiara Corsi, Stefano Lagomarsino, Chiara Lucarelli (chiara.lucarelli@fi.infn.it), Giovanni Passaleva, Silvio Sciortino, Michele Veltri

We present the results on the characterization of innovative 3D pixel diamond detectors optimised for timing applications, fabricated by laser graphitisation of resistive electrodes in the bulk of 500 μm thick single-crystal diamonds. The combination of diamond with 3D geometry allows to exploit its excellent timing properties and to enhance its well-known radiation hardness, as required by the challenge posed by the unprecedented density of charged particles foreseen at the next generation of experiments.

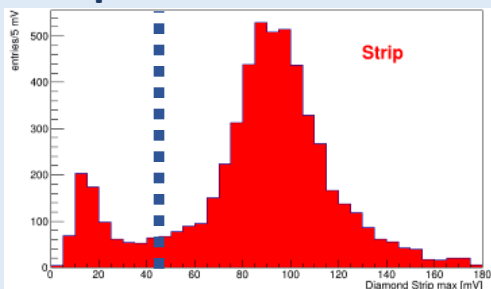
Fabrication of all Carbon sensors



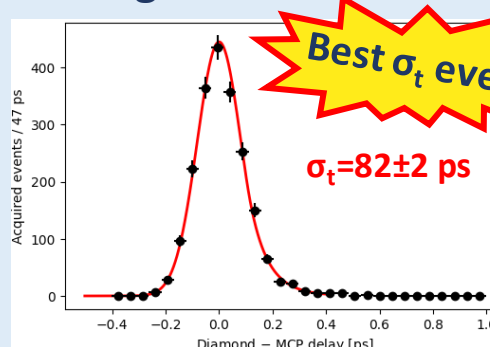
Simulation of full signal formation chain and comparison with data



Amplitude distribution



Timing characterization



Efficiency

