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Simulation of gas detectors and related physical processes

Tuesday 9 April 2013 14:30 (1h 10m)

In this lecture, we go through the basic physics processes that occur in gas-based detectors. When charged particles traverse a gas, they leave behind a trace of ionisation electrons, as well as ions and excited atoms and molecules. The electrons are attracted to the anodes and, while moving through the gas, are subject to a multitude of processes: elastic and various kinds of inelastic collisions, attachment, formation of excited states and ionisation. Currently, of order 100 different processes are taken into account in an average simulation.The movement of the charges in the detector is used as basis for read-out, as discussed in the second lecture.

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