



Spinning off from high energy physics: Applications of particle tracking detectors and methods in industry and society (20' + 5')

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The technology, methods and data processing algorithms developed for experiments in high energy physics are often considered by public opinion as being far from real-life applicability. Actually many particular technologies can find their applications outside of HEP presenting significant commercialization potential. This contribution is focused on applications of digital particle counting and tracking detectors and measurement methods enabled by them. The detectors were developed by the CERN-based Medipix collaborations, implementing know-how from HEP but adapting it also for applications beyond fundamental research.

The commercialization of such advanced technology faces significant challenges since a real market outside science does not yet exist. The potential commercial users are not informed about the availability of these technologies and their capabilities. On the other hand scientists are not fully knowledgeable about the real challenges and needs in industry. For instance, some modern composite materials require novel inspection techniques, which are not available with existing technologies. The same is true for modern medical therapeutic and diagnostic methods. High performance imaging instrumentation based on particle tracking detectors allows, in many cases, to bring accelerator based techniques to common laboratories or even construct a portable solution.

Several examples of commercial applicability of such instrumentation in the field of radiation imaging in industry, medicine and other fields will be described. They include advanced spectroscopic imaging methods (mostly with X-rays: imaging based on absorption, scattering or phase effects) for non-destructive testing and analytical imaging as well as applications of particle tracking based imaging.

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