

10th Anniversary "Trento" Workshop on Advanced Silicon Radiation Detectors

Contribution ID: 26

Type: **not specified**

Vertigo, a vertically integrated heterogeneous microsystem

Thursday, 19 February 2015 11:05 (20 minutes)

Vertigo is a light, movable, compact vertically integrated microsystem which allows secure access, measurement and three-dimensional localization of difficult radioactive environments. The system design includes a high resolution, radiation hard, MEMS-based multiple-particle pixelated detector, a camera, data storage and high band wireless transmission, cooling system and batteries. The receiver is composed by an on-line reconstruction software and real-time display. In nuclear industry, the obvious application of Vertigo would be in characterization of nuclear facilities, particularly during decommissioning when access may be limited. In a nuclear decommissioning project or a nuclear disaster, one of the first problems is identifying what radionuclides are present in an area and where they are. This is currently heavily reliant on human operators and expensive remote equipment and has safety and financial consequences. An international collaboration has recently been formed to develop Vertigo. The presentation will show the technological state of the art of each of the system components and their implementation plans.

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Session Classification: Non HEP projects