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New Lobular Detection Technology and Possible Applications

Accurate knowledge of gamma radiation fields generated either by strategic materials, orphan sources, environmental natural radiation (NORMS), decommissioning activities, as well as monitoring of radiation leakages, is essential for national regulatory agencies, border safety controls and custom administrations. Currently existing gamma cameras are not yet fully useful to meet the necessary conditions for most of these activities. A new concept of "gamma vision", developed by INVAP, uses lobular detection geometry for real time reconstruction of gamma radiation fields. This technology enables the application of the main design concept with several types of detectors, which allow to actually see dose rate from the background levels, tipically 0.1µSv/h, up to values of 1Sv/h. In this work, some applications using the presented technology are shown and described, among them: Radiation Image Portal Monitors, to detect illicit traffic of radioactive sources. Our new concept allows to detect said sources and reconstruct, on real time, the image of the radiation field and accurately locate smuggled radiation sources. Gamma Handheld or Mobile Camcorders allowing to know the real time absorbed dose and to track hot spots in real time, triggering a paradigm shift in radiological protection as we know it today.

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