

WS2-3.11

Portal Monitor for Human Body Alpha-Radioactive Contamination Control

N. Samotaev, B. Gurkovskiy, V. Miroshnichenko, E. Onischenko and A. Simakov
Micro- and Nanoelectronics Department, National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia

Pedestrian portal monitor was designed for operational remote control of an alpha radioactive surface contamination of clothing, head and hands of the nuclear industry personnel. The method and device described in this report provides the reliable fast detection of alpha-particles at a distance from the radiation source significantly longer than the alpha-particle run in air by measuring the ions clusters, produced on the tracks of the heavy charged particles in the ambient air. The alpha-radioactive pollutants are detected by gas-discharge detectors, opened to the air. It allows quickly controlling the alpha-radioactive contamination by artificial air flux, produced in closed portal, on the irregular surfaces of any indoor objects. This portal monitor may be used for safety inspection as the nuclear plants employers, so at radiation terroristic danger. The experiments shown that portal provides stable remote detecting of low alpha particles radioactivity contamination - about 50 Bq (decays per second) in 5 minutes time.