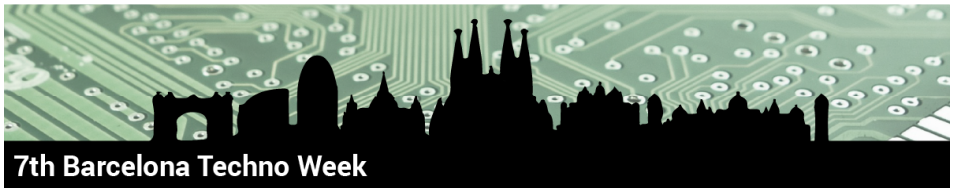

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Innovative 3D coded mask for wide-field gamma imaging

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Visualization of radioactive hotspots is essential in various fields of physics, ranging from the nuclear industry to high-energy astrophysics. One common technique for radioactivity visualization is coded aperture imaging. It involves using a position-sensitive detector accompanied by a coded aperture mask that is used to modulate the incoming radioactive photon flux. However, an acknowledged issue of this method is the limited field of view of cameras that use coded apertures. Therefore, we aim to design and manufacture innovative coded masks with 3D geometries that permit a wide field of view of up to 2π steradian and an angular resolution of less than a degree. To achieve this, we evaluated the 3D coded mask with Timepix3 and Caliste-HD photon detectors and enhanced standard reconstruction algorithms to operate with complex mask geometries.

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