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Remote: FBK roadmap towards the next-generation of 3D-integrated SiPM and SPAD technologies

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Modern Silicon Photomultiplier technologies have achieved remarkable performance in several fields, ranging from medical imaging to Big Physics experiments to industrial applications. On the other hand, there are still several challenges in the SiPM and SPAD technology development. Among them, we can consider further improving the timing performance for Time-of-Flight PET and High Energy Physics experiments, increasing the sensitivity at short wavelengths below 200 nm, enhancing radiation hardness and building high-performance single photon imagers. Thanks to a recent upgrade of its microfabrication facilities, Fondazione Bruno Kessler (Trento, Italy) is currently working on 3D integration technologies, which could significantly improve the performance parameters cited above. We adopt a layered R&D approach, working in parallel on technology developments with different TRL. In addition to a more traditional, medium density TSV approach, FBK is working on a more advanced TSV concept, allowing independent, single cell connection without relevant loss of Fill Factor. Moreover, FBK has introduced a radical redesign of the microcell structure to build Backside-illuminated, NUV-sensitive SiPMs, potentially approaching 100% Fill Factor even with small cell size of 15 um. R&D and microfabrication of these technologies is ongoing and the first experimental results are expected in early 2024.

Do you need a VISA letter for traveling to Canada ?

No

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