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The 100µPET project: a small-animal PET scanner for ultra-high-resolution molecular imaging with monolithic silicon pixel sensors

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The 100µPET project, led by the University of Geneva, the University of Luzern, and the École Polytechnique Fédérale de Lausanne, aims at the development of a small-animal positron-emission tomography (PET) scanner with ultra-high-resolution molecular imaging capabilities. This is achieved through the use of a compact, modular stack of multiple thin layers of monolithic pixel detectors and flexible printed circuits (FPC), resulting in unprecedented depth-of-interaction and volumetric granularity. Performance simulations have shown a point-spread-function of 150 µm, free of parallax effect, leading to a volumetric spatial resolution of about 0.015 mm3, one order of magnitude better than the best current PET scanners. The recent developments in simulation and hardware prototyping will be presented.

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