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Distributed imaging for liquid scintillation detectors

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Scintillation detectors have been fundamental instruments enabling big discoveries in particle and nuclear physics. Thanks to their wide versatility and relative affordability, they are still nowadays an active area in detector R&D. It is usually assumed that imaging in such a photon-starved and large-emittance regime is not possible. In this talk, I'll go over a novel approach to liquid scintillator that matches appropriate optics with highly segmented photodetector coverage. In particular, if dedicated reconstruction algorithms are employed, this technique can be used to produce images of the radiation-induced events discriminating events produced as a single cluster and those resulting from more delocalized energy depositions. After briefly describing a ML based algorithm used as discriminator, I'll also compare the performances obtained with it with a traditional reconstruction method.

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