

## A stand alone muon tracking detector based on the use of Silicon Photomultipliers

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We present the characterization and performances of a muon tracking detector developed by New York University Abu Dhabi and Gran Sasso National Laboratory (Italy).

The tracker consists of 200 channels, organized in 10 separate levels. Each level is composed of two independent 40 cm X 40 cm planes, each one equipped with 10 plastic scintillator bars read out through Silicon Photomultipliers. To increase the light collection, wavelength shifter fibers have been embedded in the scintillator bars. The instrument can be controlled and remotely operated acting on trigger level, detection thresholds and on the acquisition making possible routinely checking (noise spots, efficiency maps, event cluster length) especially if deployed in locations with limited access. The detector and its data acquisition system have been designed and built with the aim at providing 3D particle reconstruction within 2 cm precision allowing for the determination of the direction.

We will discuss its main applications: the possibility of precise measurements of the muon angular distribution, its possible use in Cultural Heritage studies allowing for the discovery of hidden chambers in pyramids for example and its capabilities of making building tomography.

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