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The Endo-Rectal probe prototype for the TOPEM project

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The TOPEM project was funded by INFN with the aim of study the design of a TOF-PET system dedicated to prostate imaging.

During last year a big effort was put into building the prototype of the endo-rectal probe from all point of view: mechanical, thermal, electrical.

A dedicated integrated circuit was adopted to have the minimum dimensions: the TOFPET Asic.

The system is composed by a LYSO pixellated crystal is seen by a 128 SiPM matrix on both surfaces: this permits Depth Of Interaction (DOI) measurement.

The 4 needed ASIC are handled by a FPGA board which transmit the acquired data over an UDP connection.

The external container was made using 3-D printing technology: internal channels on the external surface permit the flowing of controlled temperature (~ 35 °C) water.

Electronic components power is dissipated using an internal air flow kept at lower temperature (~ 20 °C).

The probe is MR compatible: a dedicated small antenna can be accommodated in the container.

This will permit simultaneous imaging in MRI and PET systems.

Collaboration

Presented on behalf of the TOPEM collaboration

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