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Low-radioactivity large-scale silicon interposer technology for particle physics experiments

Thursday 27 May 2021 07:48 (18 minutes)

The nEXO experiment requires a low-radioactivity and cryogenically compliant interconnect medium for its photodetection tile modules. The pursued tile size is 100 cm^2 which is larger than what is available with commercial interposers. We made a partnership with the IZM Fraunhofer institute to develop a custom technology. In Fall 2019, an 8" full scale wafer has been designed at Sherbrooke. The fabrication of 25 wafers was started at IZM in 2020. Wafers are extracted from fabrication at different steps for preliminary analysis. Measurements on the partial architecture show a high RDL interconnect yield and high intra/inter-layer isolation. The test vehicle contains RF transmission lines, via daisy chains, BGA/flip chip footprints, power distribution networks, and more.

The presentation at the TIPP2021 will detail the custom technology alongside the technology potential for the nEXO experiment according to the initial characterization.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

Funding information

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