

US HFCC Inner Tracking and Timing

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Activities and L3's

- Semiconductor tracking: Caterina Vernieri and Artur Apresyan
- Gaseous Tracking: Junjie Zhu and George Iakovidis
- Low mass mechanics – Andy Jung
- I will not present status as this has been discussed in other meetings.
- We plan a small tracking/timing workshop at BNL on 5/13 – coordinate US efforts, especially around MAPS. Spend PM with EIC/EPIC colleagues to explore common areas and overlaps.

MAPS FY27

- MAPS development within the SkyWater Technology process, detailed TCAD simulations.
- Multi-project wafer (MPW) runs, with primary emphasis on sensor optimization.
- Comprehensive evaluation using laser systems and radioactive source measurements
- Incorporate through-silicon via (TSV) reserving area and ensuring compatibility for future integration of sensor and readout electronics.
- Overall, the FY27 program aims to establish a robust and scalable MAPS platform with SkyWater, targeting high spatial resolution and low power consumption.
- These ambitious detector development programs demand substantial effort and large collaborations. If we cannot ensure continuity with ASIC developments, the US will be continuing falling behind Europe with MAPS developments.
- Request = \$250,000 for design and testing at FNAL, SLAC, SBU, and Brown

Straw Tube Project (Michigan)

- 1. 5 months of a mechanical technician: \$51,600 To design tools and construct the prototype chamber with 3-meter-long straws
- 2. 2 months of a junior electronics engineer: \$23,700 To develop a cluster-finding algorithm, perform cosmic ray and test beam studies, and analyze data taken
- 3. Materials and machine-shop cost for a prototype chamber: \$24,700 To purchase 3-meter-long straws (there is a minimum length requirement), ship them to Michigan, machine-shop costs to fabricate tools for tube assembly and chamber construction
- Total = \$100,000

Low Mass Mechanics

- Purdue with FNAL and Buffalo applied to DOE Lab FOA for funding but were not selected
- Ask whether they can repurpose proposal to HFCC?
- For 0\$ requested:
- LBNL proposed an LDRD
 - to gain experience with thin wafers including fabrication and simulation of stress/thermal
 - Low mass CF transmission lines

Fast Timing – no funding requested

- LBNL proposed an LDRD to evaluate fast timing readout electronics in wide-band-gap processes which could potentially run without cooling
- Effort on SiC-LGAD has been funded by DOE for several years and has yielded working devices
- Possible application to an inner timing wrapper between pixels and gas chamber