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SI LAB
Silizium Labor Bonn

DEPFET
Active Pixel Detector

VXD BEAST

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BEAST Meeting

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Strasbourg pre-meeting:

- 12th and 13th January 2015 in Munich

- HLL, Strasbourg, MPI, Bonn; DESY and KEK (via SeeVogh)

→ Global VXD scheme during Phase 2 and next steps
→ Possibilities for PLUME in Phase 2 (J. Baudot et al.) based on a collaboration agreement between KEK and IN2P3
→ Possibilities for plastic scintillators and SiPM in Phase 2 (F. Simon et al.)

Strasbourg pre-meeting:
https://indico.mpp.mpg.de/conferenceDisplay.py?confId=3240

Strasbourg meeting:
https://indico.in2p3.fr/event/10971/

Main Conclusions

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- PLUME: Double layer of CMOS sensors. Thin and highly granular sensors but slow (M26, Mistral).

Still, some tricks can be played and 2-layer tracking possible if occupancy permits.

Might be useful in certain Θ locations to complement the PXD+SVD modules.

Additional locations far from the IP under investigation: hot spots inside the QCS (?)

- Plastic scintillators with SiPM. Ultrafast. Seem to be a nice counterpart of PLUME.

System developed for the HCAL (CALICE) of ILC → Not optimal yet for our application.

- Needed: Definition of requirements and detailed measurement plan (this week)
- Still missing for both systems the technical feasibility: Rad. Hardness, cable length, …
- Simulations are mandatory: Rates, energies, detector geometry and optimal placement. Synergy with machine group is needed!

Old Design

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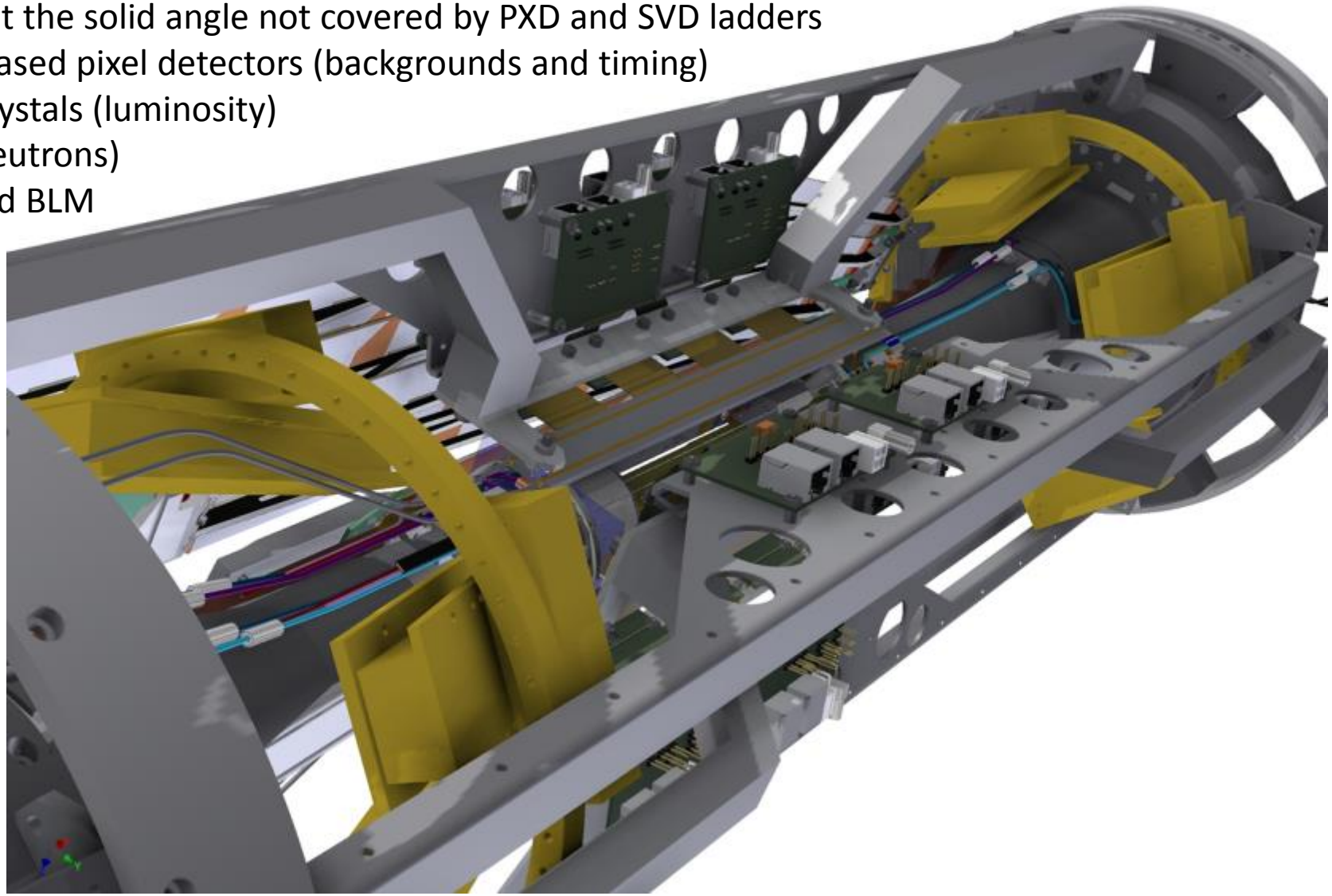
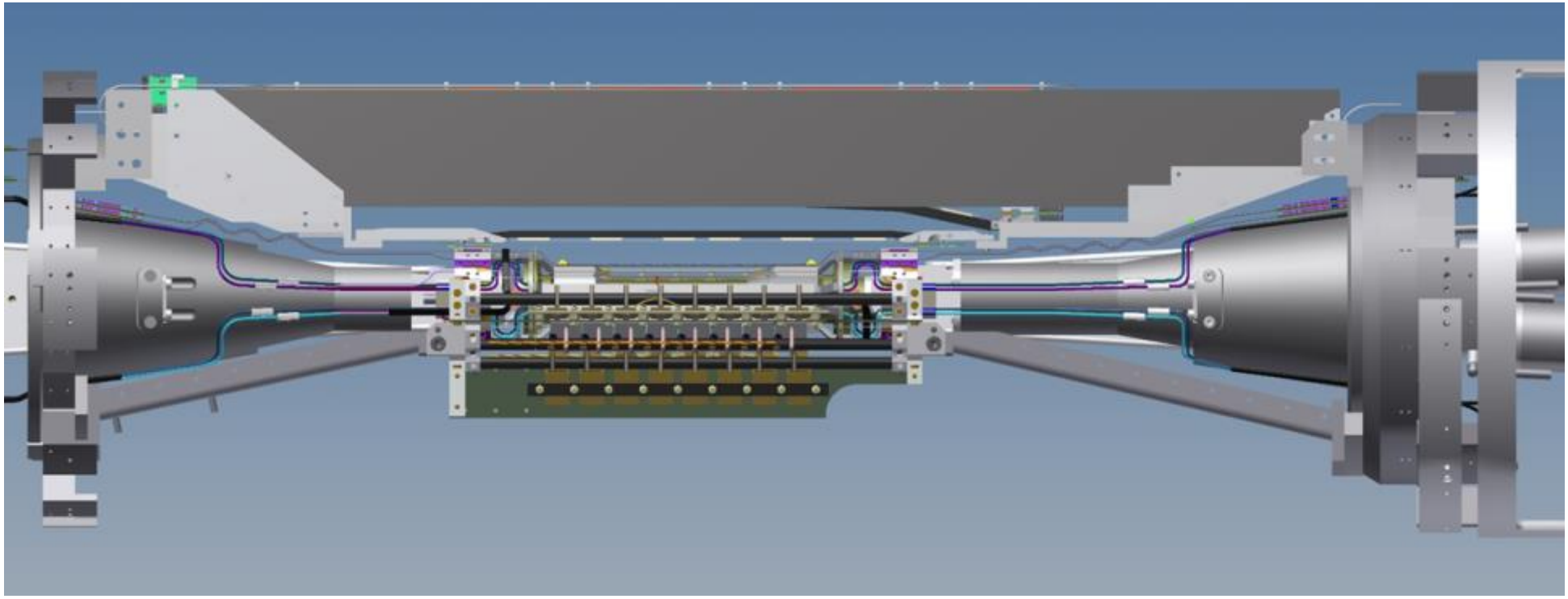
Instrument the solid angle not covered by PXD and SVD ladders

- FE-I4 based pixel detectors (backgrounds and timing)
- BGO crystals (luminosity)
- TPC (neutrons)
- FOS and BLM



Redesign Support Structures



- Redesign of support structures: Lighter, as required
- Design still evolving: further material reduction (kapton)
- Cooling needed, but no optimal solution found yet
- BGO crystals may see still too much material in front

Updated Geometry

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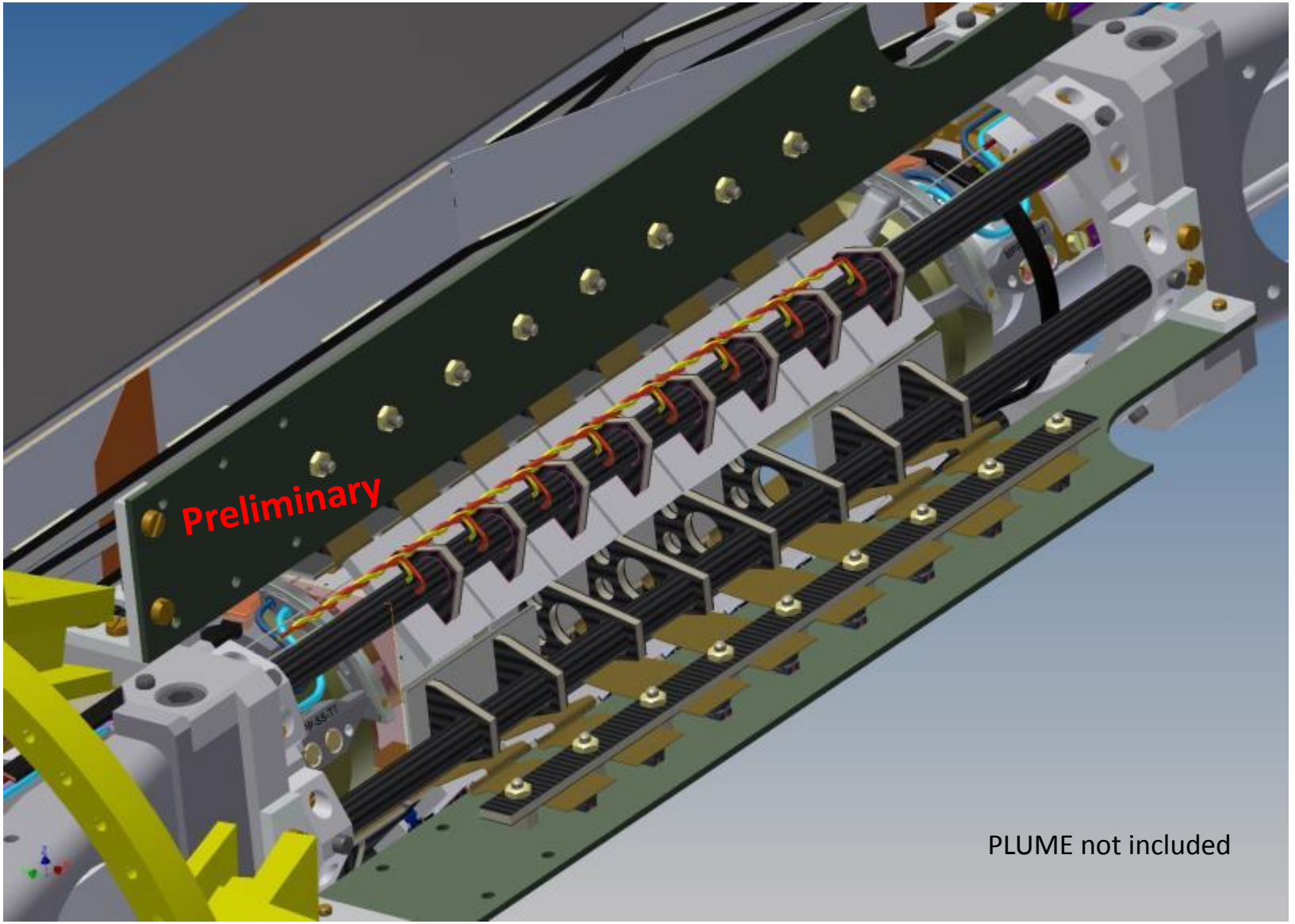

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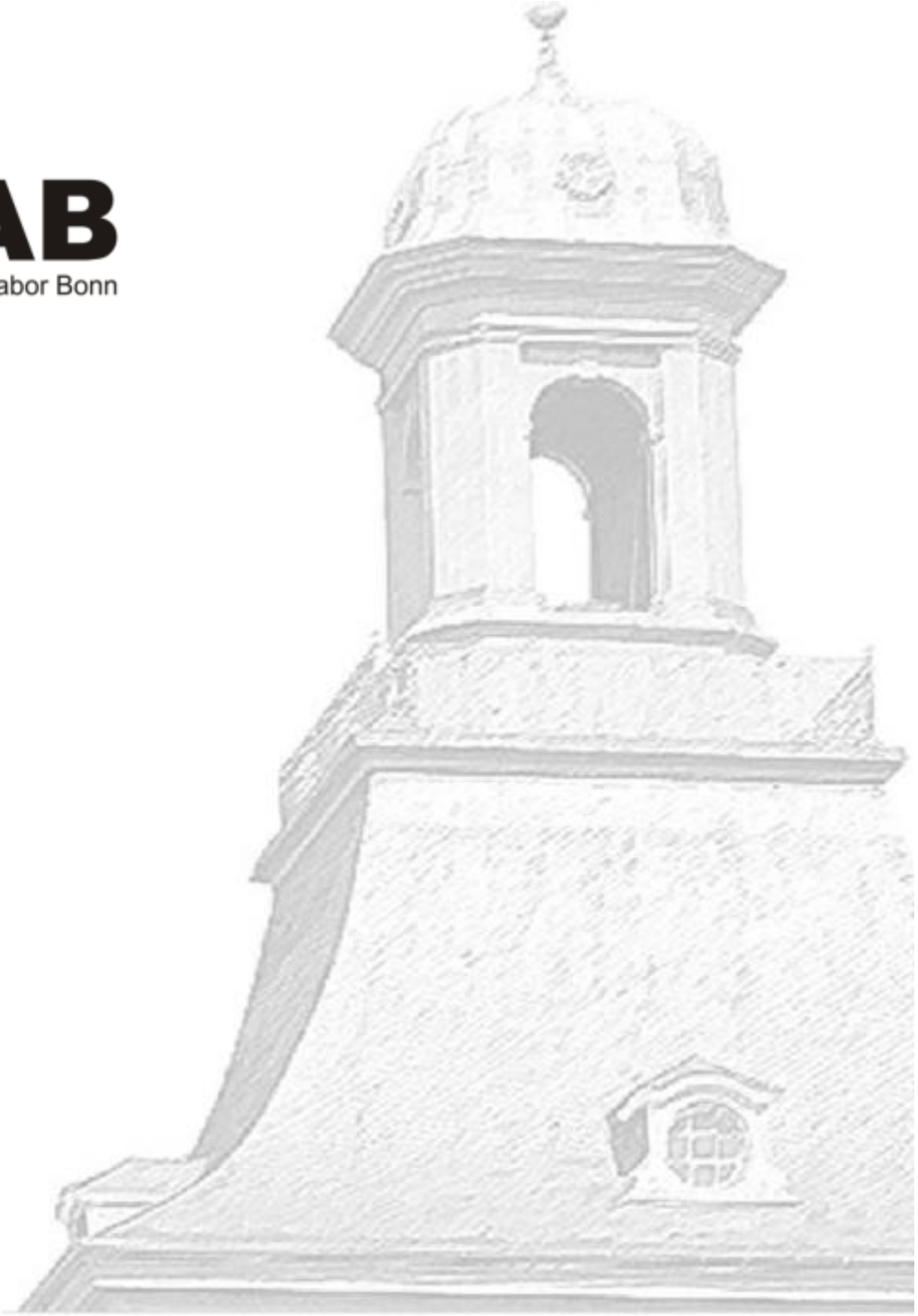

Thank you

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