Expressions of Interest

FCC-PED Detector Concepts

December 11

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DESY

A Few Points

Reminder: Calls

Response so far

Satellite meeting FCC workshop, January 17

EOIs

From the Call

With this we encourage the federation of international efforts focussing on one or more technologies for a given sub-detector. These activities are expected to be well connected to technological R&D pursued in the framework of the CERN-anchored DRD collaborations and complement these with a focus on system integration aspects at the level of the sub-detector as well as its integration into one or several overall detector concepts. They should support the R&D with simulation and optimisation of system performance and, together with detector concept groups, provide guidance to the R&D via feedback on system design and performance.

EoIs should be compact documents (2-4 pages) including

- The scope of planned activities for the next 3-5 years
- The Partners (Institutes) and their expertise
- The names of one or two contact persons
- The connection with technological activities in the DRD framework
- The engineering and simulation connections with concept groups
- References to relevant more detailed documentation of the technologies

We plan to prepare a document combining the EoIs received in response to this call for a submission to the ESU process, together with an executive summary. Groups may choose to submit their EoIs independently as stand-alone contribution in addition to, or instead of inclusion in the combined PED submission. For inclusion in combined submission, or for reference in the summary, we are asking to send them in final or close-to-final form by end of January 2025.

Reminder

The Calls

Sent out **Calls for Expressions of Interest** on October 11

- one on detector concepts, on on sub-detectors - EoIs should refer to each other

Simultaneously: opened a **web page** for interested parties to sign up, declaring intent to prepare an EOI

- to foster cooperation between groups and facilitate common EoIs
- soft **deadline mid November**

About 70 EoIs received so far

- proposed some grouping

Satellite **meeting** to FCC Physics Workshop (**Jan 17**)

- short presentations on upcoming EoIs

Deadline Jan 31 for submission to **PED**

- for editorial feedback and inclusion in combined FCC submission summary

Deadline Mar 31 for submission to **ESU**

- submission of executive summary and attached EoIs (optional)

Editorial team:
Srini Rjagopalan,
Guy Wilkinson,
with MD, MAP, FS

Grouped EoIs

https://docs.google.com/spreadsheets/d/1iHTDN1TJpfk_sDrYm7HrY8zuQxfDZj4MtFooziXq5rQ/edit?usp=sharing

EOI Grouping

File Edit View Insert Format Data Tools Extensions Help

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A1 EOI Abstract ID

	A	B	C	D	E	F	G
17			SiPM-on-Tile HCAL				
18	**D0032**	Calorimeter	**Development of the SiPM-on-Tile Analog Hadron Calorimeter (AHCAL) technology: detector geometry, readout and trigger concept and electronics, mechanical and thermal integration, photon sensors, scintillators, simulation and reconstruction.**	Frank Simon	KIT	frank.simon@kit.edu	DESY, U Hamburg, U Heidelberg, KIT, U Mainz, UT Arlington, NIU, FZU Prague
19			SiW ECAL				
20	**D0039**	Calorimeter	**SiW-ECAL : a silicon-tungsten highly granular electromagnetic calorimeter suitable for particle flow-based detector concepts at a Higgs/ElectroWeak/Top factory.**	Vincent Boudry	LLR – LLR, CNRS, École polytechnique, Insti	Vincent.Boudry@in2p3.fr	IJCLab (Orsay), LLR (Palaiseau), LPNHE (Paris), Omega (Palaiseau), DMLab, IFIC (Valencia), CERN, U. Tokyo, KEK, iThemba labs (Cape Town)
21	**D0074**	Calorimeter	**Building on the experience / contribution to CMS and CMS Upgrades - and in particular HGCAL and design studies, high throughput digital electronics and algorithms. Most of the potential effort is currently focused on completing the latter.**	Anne-Marie Magnan	Imperial College London	a.magnan@imperial.ac.uk	TBD
22			MAPS ECAL				
23	**D0059**	Calorimeter	**Development of MAPs for Si-tungsten calorimeter.**	Alexander Paramonov	Argonne National Laboratory	aparamonov@anl.gov	ANL
24			Tile fibre HCAL				
25	**D0086**	Calorimeter	**The ALLEGRO HCAL is a concept of a scintillating tile hadronic calorimeter for the central region, designed to provide a high-performance, high granularity and cost-effective solution for FCC-ee.**	Henric Wilkens	CERN	Henric.Wilkens@cern.ch	LIP, CERN, ITIM Cluj, IFIC Valencia, Univ. of Be
26			LumiCal				
27		Lumical	**Development of Lumical**	Mogens Dam			
28			Carbon fibre wire chamber				
29	**D0013**	Main Tracker and Envelopes	**Interested and working towards detector concept based on a novel wire chamber concept employing carbon fiber wires for the Outer tracking device of FCC-ee. Open for additional collaborators.**	Andy Jung	Purdue University	andreas.werner.jung@cern.ch	Purdue University
30			Straw-tube tracker				
31	**D0015**	Main Tracker and Envelopes	**Straw-tube tracker design and tracker design optimization**	Oliver Kortner	Max-Planck Institute for Phyics	Oliver.Kortner@cern.ch	University of Michigan, Ann Arbor
32							
33	**D0062**	Main Tracker and Envelopes	**R&D for straw tracker electronics/readout**	Anyes Taffard	UC Irvine	ataffard@uci.edu	UM, MSU, UMass, Harvard, Duke, UT Austin, MPI
34	**D0038**	Main Tracker and Envelopes	**Development of a thin-wall straw tracker for FCC-ee inner tracking system. Combined with the pixel detector and silicon wrapper, it will provide excellent momentum resolution and PID capability over a wide momentum range**	Junjie Zhu	University of Michigan	junjie@umich.edu	MPI, UMass, Harvard, Tufts, MSU, UC Irvine, Duke, UT Austin

Satellite Meeting, Following FCC workshop at CERN

Friday January 17, 0900-1300

Ask each EoI group to present

- sounds challenging - but worked well at US FCC, MIT

Encourage groups to merge

- ideally merge EoI documents
- can also combine presentation only
- merged EoIs get more time

Prepared template

- distribute in the next days

<ID No> <Your Technology Title>

Contact Persons:

- Name 1, email
- Name 2, email
- Name 3, email

Collaborating Institutes & expertise/facilities:

- Institute 1
  - Expertise 1, facility 1
- Institute 2
  - Expertise 2, facility 2
- Institute 3
  - Expertise 3, facility 3

Connections with DRDs:

- DRDa, WPx: …
- DRDb, WPy: …

Connections with Concept Groups:

- Engineering/Simulation studies with concept NN

References: [1]: A detailed write up of technology A, NIM-A, vvv, pppp, 2024; [2]: A detailed write up of technology B, JINST, vv, ii, 2021; [3]: Our EoI draft in overleaf <link>

<ID No> <Your Technology Title>

Planned activities for the next 3-5 years

- 2025: Task 1
- 2026: Task 2
- 2027: Task 3

Eye candy, prototype results, …

<For each merged EoI you may add one extra slide. >

References: [1]: A detailed write up of technology A, NIM-A, vvv, pppp, 2024; [2]: A detailed write up of technology B, JINST, vv, ii, 2021; [3]: Our EoI draft in overleaf <link>

Back-up