Snowmass 2021
Instrumentation Frontier
IF06 - Calorimetry - Conveners

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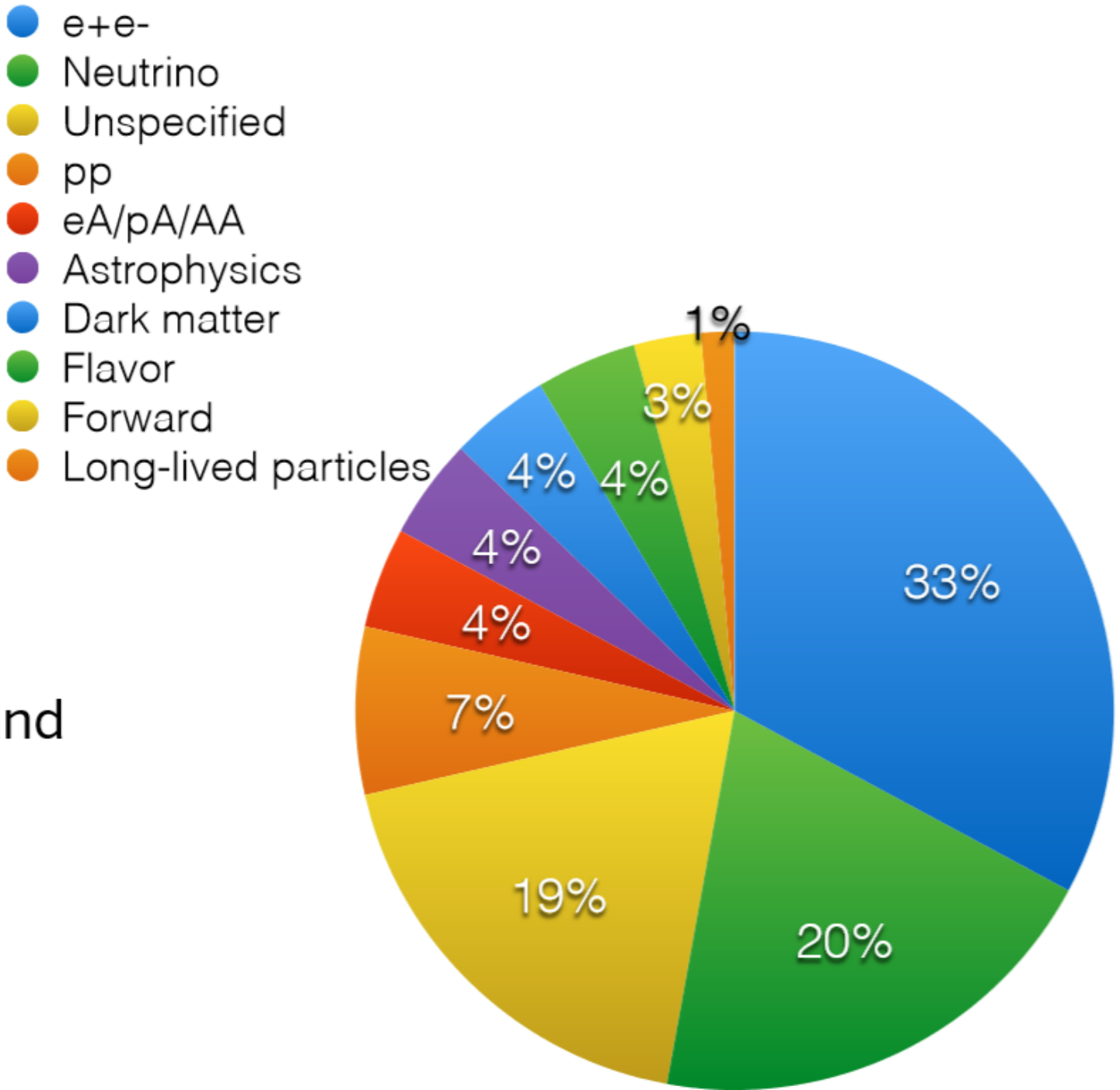
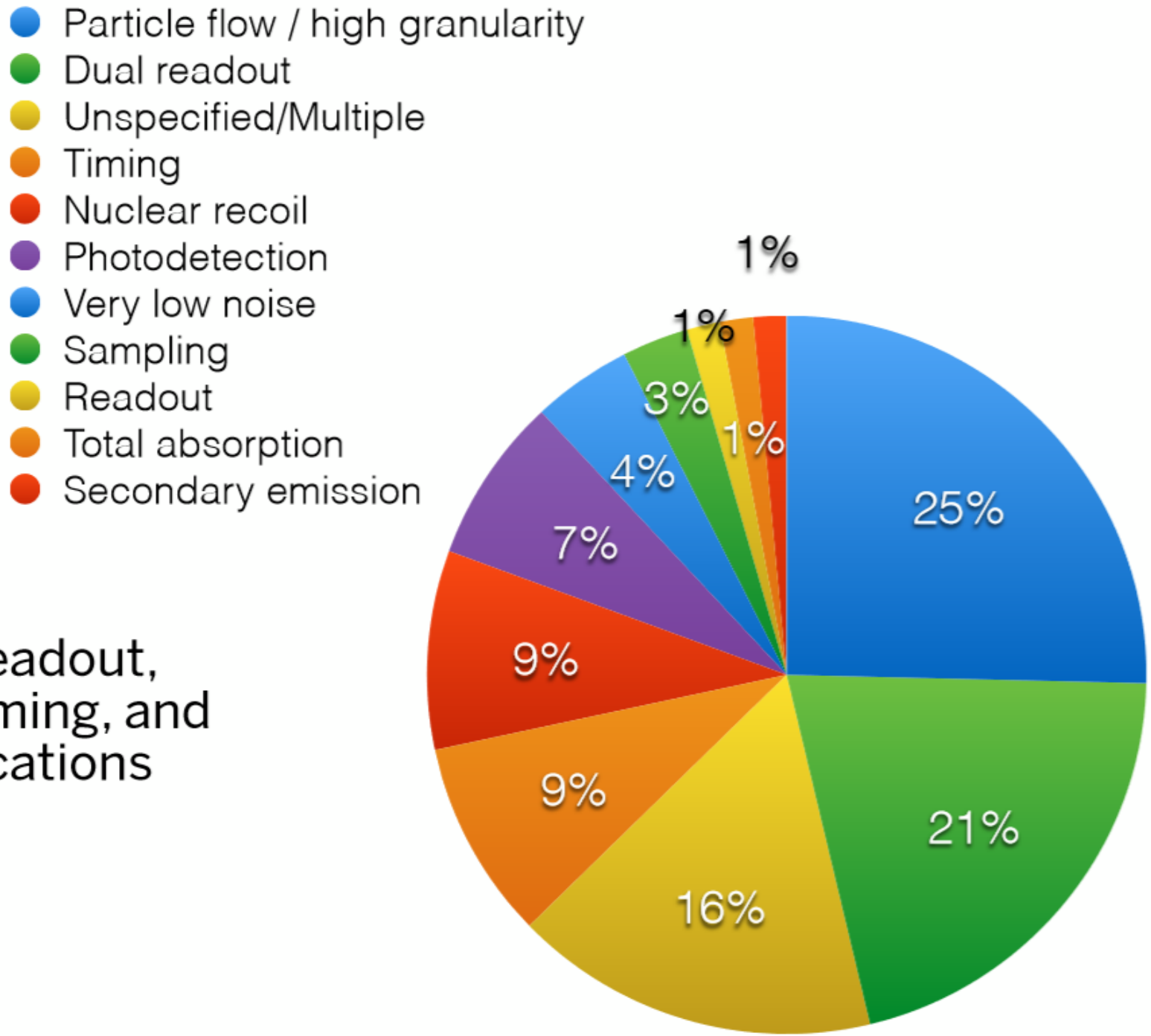
65 LOIs Submitted



- e^+e^-, generalized R&D, and neutrino applications dominate



- Particle flow, dual readout, generalized R&D, timing, and nuclear recoil applications dominate

Organize LOIs into groups for White Paper planning

Collider related

Particle Flow

Title	Contact	File	e	Experiment	Material	Physics
e+e-						
Belle II detector upgrades	sevahsen@hawaii.edu	IF2_IF7_IF3_IF4_IF5_IF6-056.pdf	Multiple	Belle II	Plastic scintillator	e, gamma ID
Detector optimisation and detector technology R&D for the CLIC detector and for the CLD detector of FCC-ee	mbenoit@bnl.gov	IF3_IF6_Mathieu_Benoit-188.pdf	PF	CLIC, CLD	Si, scintillator	e+e-
SiD	A.White	IF3_IF6-EF1_EF4_Andy_White,_Marcel_Stanitzki-027.pdf	PF	SiD/ILC	Si, scintillator	e+e-
Advanced GEM detectors for future collider experiments	A.Colaleo (Bari)	IF5_IF6-EF4_EF0_COLALEO-068.pdf	Sampling	FCC, muon collider	GEM	e+e-, mu+mu-, hh
Development of highly granular scintillator strip electromagnetic calorimeter	wataru@icepp.s.u-tokyo.ac.jp	IF6_IF0_CALICE-058.pdf	PF	CALICE	Scintillator	e+e-
CALICE R&D for a highly granular silicon tungsten electromagnetic calorimeter, SiW-ECAL	Vincent.Boudry@llr.in2p3.f	IF6_IF0_CALICE-077.pdf	PF	CALICE	Si	e+e-
CALICE R&D for compact readout systems for highly granular calorimeters	katja.krueger@desy.de	IF6_IF0_CALICE-082.pdf	PF	CALICE	Asic	e+e-
Digital hadron calorimetry	yasar-onel@uiowa.edu	IF6_IF0_Yasar_Onel-048.pdf	PF	ILC/CLIC/FCC	RPC	e+e-
High-granularity crystal calorimetry	S.Eno	IF6_IF0_Yong_Liu-064.pdf	PF	ILC/CLIC/FCC	Crystals	e+e-
CALICE R&D for compact readout systems for highly granular calorimeters	katja.krueger@desy.de	IF6_IF0-026.pdf	Readout			e+e-
Particle flow calorimeters for the CEPC	liujianb@ustc.ac.cn	IF6_IF0-176.pdf	PF	CEPC	Si, scintillator	e+e-
Fast optical photon transport at GEANT4 with dual-readout calorimeter at future e+e- colliders	hdyoo@yonsei.ac.kr	IF6_IF0-CompF2_CompF0_Hwidong_Yoo-060.pdf	DRO	CEPC, FCCee	Optical fibers	e+e-
Tau reconstruction and identification using machine learning technique with dual-readout calorimeter at future e+e- colliders	hdyoo@yonsei.ac.kr	IF6_IF0-EF1_EF0_Hwidong_Yoo-063.pdf	GEANT, DRO	CEPC, FCCee	Optical fibers	e+e-
pp						
The High Granularity Calorimeter upgrade to the Compact Muon Solenoid detector	ryohay@fsu.edu	IF6_IF0-165.pdf	PF	CMS	Si, scintillator	pp
Advanced optical instrumentation for ultra-compact, radiation hard EM calorimetry applications	rruchti@nd.edu	IF6_IF4-EF1_EF4-102.pdf	Sampling, photodetection	FCChh	Scintillator	pp
Forward region of future colliders, high intensity and low earth orbit cosmic frontiers	irfield.edu	IF6_IF9_David_R_Winn-036.pdf	Photodetection	any	PMT, dynodes	

Instrumentation Frontier
IF06 – Calorimetry – White Papers
Lead Authors

1) **Collider**

- Particle Flow Calorimetry for Future Colliders
  Katja Kruger (DESY)
  Randi Ruchti (Notre Dame)

- Dual Readout Calorimetry for Future Colliders
  Sarah Eno (Maryland)
  Franco Bedeschi (INFIN-Pisa)

- Precision Timing for Collider Experiment based Calorimetry
  Frank Simon (MPP Munich)
  Sergei Chekanov (ANL)

2) Neutrino

- Calorimeter Techniques and Materials for Neutrino Experiments
  Milind Diwan (BNL)
  Jae Yu (UTA)

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3) **Dark Matter**

- New Calorimeter Techniques and Materials for Dark Matter Detection
  David Winn (Fairfield)
  Rick Gaitskell (Brown)

4) **Materials**

- Materials for Future Calorimeters
  Ren-Yuan Zhu (Caltech)
  Minfang Yeh (BNL)

5) **Astro/Cosmic** - possible White Paper - maybe include these LOIs in an IF02 paper?

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IF06 White Paper Preparation

9/27 - Send guidance to White Paper lead authors

Before 10/15/21 - lead authors requested to contact LOI writers - request sections of White Paper

First draft White Paper 12/1/21

Dec 21 - Review first draft by IF06 Conveners/iterate with lead authors

Early Jan 22 - 2nd draft - share with IF06 for comments etc.

2/1/22 - 3rd draft

2/15/22 - final request for comments etc.

3/1/22 Final draft ready

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for Instrumentation Frontier/Calorimetry

Next steps for IF06

- White Paper lead authors contact LOI writers for contributions
- Let LOI writers know in which White Paper their inputs will be processed
- IF6 Conveners – Calorimetry – meet each month- next meeting 10/15 2.30pm CDT
- Additional opportunities for talks/new ideas
- Consider convergence of IF6 issues with DoE/BRN
- Study input from e.g. ECFA Detector R&D Roadmap, LCWS2021, CPAD, TIPP,…

EXTRA

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Instrumentation Frontier – Calorimetry
New schedule

- White Paper submission to arXiv: no later than March 15, 2022. Late submissions and updates are likely not to be incorporated in the working group reports, but will be included in the Snowmass on-line archive documents.
- Preliminary reports by the Topical Groups due: no later than May 31, 2022.
- Preliminary reports by the Frontiers due: no later than June 30, 2022.
- Snowmass Community Summer Study (CSS): July, 2022 at UW-Seattle.
- All final reports by TGs and Frontiers due: no later than September 30, 2022.
- Snowmass Book and the on-line archive documents due: October 31, 2022.