A 2-pager for RDC9 on Calvision: Making Maximal use of Calorimeter Information member list not complete

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Calvision is a consortium of laboratories and Universities interested in understanding how to make maximal use of the information provided by calorimeters based on light-emitting active materials. We look at all aspects of optical-based calorimetry: from reconstruction of energies using information such as wavelength for optical materials and timing through full reconstruction in collider-style experiments. Current projects include understanding possible improvements to dual-readout calorimeter based on homogeneous crystals enabled by sipmms, use of timing and advanced algorithms in dual-readout detectors based on scintillating and non-scintillating fibers, identifying and characterizing high density low-cost homogeneous materials, advanced algorithms for particle and event reconstruction in collider-type detectors, advancing the state-of-the-art in calorimetric simulation including optical simulations, simulation-based optimization of calorimeters and collider detectors, and low-mass support structures for calorimeters. Our goal is to provide a rich, collaborative environment for those interested in light-based calorimetry, and to assist our members in achieving funding. We are a member of the European ECFA-DRD6 work area 3 as well [1]. We actively collaborate with the IDEA collaboration [2].

CalVision was formed in 2020. The US members of our collaboration received 3-year funding from the DOE instrumentation frontier for our work in 2022, under grant DE-SC0022045. One of our collaborators at FNAL received 2023 New Initiatives funding as well to expand our research to include precision timing. We are open to new membership, including international partnerships (although of course the current funding is limited to those on the grant). We currently hold monthly meetings and have a CERN-hosted mattermost and twiki where members can report on their progress and receive feedback and advice from other group members. More information can be found at our web page: https:detectors.fnal.govprojectscalvision

Some publications related to our work include Ref. [3], Ref. [4], and Ref. [5].

References

[1] Implementation of TF6 Calorimetry, https://indico.cern.ch/event/1213733/.

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[3] M. T. Lucchini, C. G. Tully, W. Chung, S. C. Eno, Y. Lai, L. Lucchini, M.-T. Nguyen, New perspectives on segmented crystal calorimeters for future colliders, JINST 15 (11) (2020) P11005. arXiv:2008.00338, doi:10.1088/1748-0221/15/11/P11005.

[4] M. T. Lucchini, L. Pezzotti, G. Polesello, C. G. Tully, Particle flow with a hybrid segmented crystal and fiber dual-readout calorimeter (2022). arXiv:2202.01474.

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