Snowmass 2021 Proceedings

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The Snowmass 2013 proceedings can be found at the econf website:

https://www.slac.stanford.edu/econf/C1307292/

Norman Graf and I put together this web site, and I think it was successful at maintaining and serving the contributions. I volunteered to put together a similar web site, also hosted by econf, for Snowmass 2021.

This screenshot shows the layout for typical frontier. There is the frontier report at the top, then the subgroup reports. For these reports, we used a coherent style file and also cleaned up the LaTeX submitted by the authors. Those versions are stored at the econf site. Below this, there are links to the submitted contributions, organized by subject. All submitted papers were posted on the arXiv and can be retrieved from there. We set this up so that the link retrieves the most recent, possibly updated, version.

The executive summary of the conference and the major frontier reports were also published as a printed book — and a large pdf available from the econf site. The book is mainly a souvenir, I think.

Intensity Frontier

Chapter 2: Intensity Frontier
Conveners: J.L. Hewett and H. Weerts

Working Group Summary (arXiv:1401.6077)

Subgroup Reports:

12.	Neutrinos	1310.4340
13.	Baryon Number Violation	1311.5285
14.	Charged Leptons	1311.5278
15.	Quark Flavor Physics	1311.1076
16.	Nucleons, Nuclei, and Atoms	1312.5416
17.	New Light Weakly Coupled Particles	1311.0029

Contributed Papers:

General:

001	K. Lesko	Why the US Needs a Deep Domestic Research Facility: Owning rather than Renting the Education Benefits, Technology Advances, and Scientific Leadership of Underground Physics	1304.0402 (PDF)
019	S. Holmes, *et al.*	Project X: A Flexible High Power Proton Facility	1305.3809 (PDF)
021	S. Glashow	Particle Physics in the United States: A Personal View	1305.5482 (PDF)
024	V.Shiltsev, *et al.*	Issues and R&D Required for the Intensity Frontier Accelerators	1305.6917 (PDF)
055	A. Kronfeld, *et al.*	Project X: Physics Opportunities	1306.5009 (PDF)
056	S. Holmes, *et al.*	Project X: Accelerator Reference Design	1306.5022 (PDF)
063	D. Asner, *et al.*	Project X: Broader Impacts	1306.5024 (PDF)
101	J-P. Delahaye, *et al.*	Enabling Intensity and Energy Frontier Science with a Muon Accelerator Facility in the U.S	1308.0494 (PDF)
103	D. Kaplan, *et al.*	Measuring Antimatter Gravity with Muonium	1308.0878 (PDF)
128	B. Bilki, *et al.*	SLHC Endcap Hadron Optical Calorimetry Upgrades in CMS with Applications to NLC/T-LEP, Intensity Frontier, and Beyond	1308.5939 (PDF)
186	J. Berger, *et al.*	The CP-violating pMSSM at the Intensity Frontier	1309.7653 (PDF)

Charged Leptons:

044	K. Knoepfel, *et al.*	Feasibility Study for a Next-Generation Mu2e Experiment	1307.1168 (PDF)
182	C.-h. Cheng, *et al.*	The next generation of mu -> e gamma and mu -> 3e CLFV search experiments	1309.7679 (PDF)

Neutrinos:

003	D. Asner, *et al.*	Predicting Reactor Antineutrino Emissions Using New Precision	1304.4205 (PDF)

We have much time to decide on a format and LaTeX style for the frontier and subgroup reports. The immediate problem is to have a process and maybe also a format for contributed papers — “white papers” and other more specialized contributions.

It worked well in 2013 to ask authors to submit their papers to the arXiv and then inform the relevant frontier conveners. I would like to use this method again.

An improvement would be to have a web page with links to all submitted contributions. If Bob Bernstein would give me space on the Snowmass web site, I am happy to maintain this. The page would simply list the title and authors of the contributed papers, organized by frontier, with a link to each paper on the arXiv. Authors would need to notify me by email to have a link put on this page.

It would also be useful for this page to host bibliographies for various projects being considered at Snowmass. Many of us spent much time last year writing papers for the European Strategy for Particle Physics study. We ought to make it easy for people in the US to find these papers. It is much easier to put together a bibliography than to rewrite the papers. Toward the end of the Snowmass study, advocates of projects could write updates of these papers and submit them to the proceedings.

In an earlier meeting, it was discussed that Snowmass should have a fixed style for white papers (for example, less than 10 pages). If we want this, the requirements should be posted clearly on the Snowmass web pages.

Another question is whether Snowmass submissions should be “branded”. Here is a sample first page of a submitted paper? Yes, I have a macro and template file for this. What do you think?

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Searching for New Physics using Precision Standard Model Measurements

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ABSTRACT

New physics interactions beyond the Standard Model can make themselves known as small corrections to Standard Model reactions. There is a diverse array of proposals for new physics, and so any parametrization of those effects must be as general and all-inclusive as possible. This can be accomplished by the use of Standard Model Effective Field Theory (SMEFT). In this article, part of the celebration of 50 years of the Standard Model of particle physics, I describe how SMEFT has been applied to search for new physics in fermion-fermion scattering and precision electroweak analysis and how it will be applied in the precision study of the Higgs boson.

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1 Introduction

As has been well documented at this symposium, the Standard Model has been remarkably successful at explaining a wide range of experimental measurements. From low-energy observables in weak interaction decays to multiparticle production at the highest energies of the LHC, the Standard Model seems to give a complete description of the reactions of elementary particles.

2 Conclusions

Though the Standard Model is very successful in explaining current experimental data, we should not claim that it is the final theory of the fundamental interactions. It is easy to call out phenomena in the universe that the Standard Model does not account for. In this article, I have emphasized the mysteries surrounding the most important conceptual feature of the Standard Model physics, the spontaneous breaking of its gauge symmetry, which the model can parametrize but which it is

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