Minutes

* Intro – C. Polly
	+ Charge from SAC
		- <https://docs.google.com/document/d/1tiY3XKHgYOft-NUJO7zWuCVRrBQKg8BbkfixRmbgqXo/edit?usp=sharing>
	+ Important dates
		- April 13 (6-8 PM CDT) – Town hall meeting at DPF, join from WH1W if you like (Kiburg)
		- May 1 prioritized list to report to SAC
		- June 14 interface to resources and All-Scientist retreat
		- Fall produce written report
		- Plan for Snowmass in ~2020
* REDTOP – Corrado Gatto
	+ Eta factory proposal, multi-purpose detector with dozens of physics channels to explore
		- Can use DR or PIP-II
	+ Proposal history
		- LOI to PAC in 2017 - science goals appreciated, but not recommended to proceed at that time
			* Director recommended waiting a couple of years
		- Jan 2018 presented at the CERN “Physics Beyond Colliders”
			* Feasibility at CERN 1/10th of flux and a larger impact on existing physics program as compared to FNAL
	+ Collaboration
		- 8 countries, 23 institutions, 67 collaborators
	+ Current activities
		- Event generator development
		- Simulation, digitization, reconstruction, and analysis
		- Detector optimization and sensitivities
		- Detector R&D
			* Adriano2 prototype in development at NIU
			* Optical TPC nobody working actively at moment
			* Fiber tracker copies LHCB design
	+ Timeline
		- 2 yrs R&D + 1 yr detector construction once approved
		- 1 yr to add a SC cavity to the DR
	+ Conclusion
		- Couple of years (or more) away due to program planning at CERN, short-term need is funding for detector R&D
		- Competition form LHCB, complimentary due to low energy
	+ Questions
		- Conflict with Mu2e pushes this way out if we use the DR?
			* Only need an integrated year of POT
			* Construct elsewhere, install in summer shutdown
			* Need one more RF cavity
		- Is there space for one more?
		- Why DR decelerate instead of just going for PIP-II?
			* Will take much longer to mount
			* Can build in the AP50 hall
			* Target will be very different for PIP-II (tritium target preferred, politically challenging), current plan uses a solid target
		- Above or below the transition?
			* Have to go through transition
* Mu2e-II – Doug Glenzinski
	+ Recent history
		- June 2018 – directorate initiated task force
		- July 2018 – Presented to FNAL PAC
			* Physics case is compelling, endorsed R&D
		- Aug 2018 – Northwestern workshop
		- Sep 2018 – Proposal to measure extinction performance of PIP-IIs beam chopper
		- Oct 2018 – Interfaced with the DPF ESG white paper
		- Dec 2019 – Submitted joint white paper on CLFV in muons with 4 collab spokes
		- Feb 2019 – Presented to DOE, OHEP OK with the R&D effort as long as not too larger and dovetails with Mu2e
		- Mar 2019 – Associate scientist hire in AD target group to help with Mu2e I/II target planning
	+ Current priorities
		- Narrow window in FY19/20 where the extinction measurement can be completed before PIP2IT is scheduled for decommissioning
		- R&D for production target, engage new AD target group hire and/or RADIATE collaboration (worldwide group looking at targetry)
		- R&D for new PS conductor. Not yet clear the existing PS will work
		- Rethink where Mu2e-II should aim to be by the next P5 exercise, people saturated, Mu2e project schedule extends through 2022
	+ Other CLFV – Bob Bernstein
		- 3 main muon channels, already doing 1...how can we add the other two?
			* Other two are stopped (but not captured 🡪 mu+)
			* Want steady beam due to accidental backgrounds, while Mu2e needs a pulsed source
		- Can we get the x100 needed for next gen experiments and to be competitive with PSI
			* PSI uses 1% of beam to get 10e8 muons/sec from a surface muon beam
		- Community on these 3 channels numbers about 600
		- FNAL advantages
			* Green field, not limited to be shoe-horned into available footprints
			* Use capture solenoid or lens to focus pi+ to get many more muons per proton compared to PSI
			* Slow muons down to 10 MeV/c..SCRF? Improved vertex
			* Possibly use PS from Mu2e, 30-40 MeV/c muons...see talk for ideas on how to convert to sending mu+ to expts instead of capturing mu-
				+ Mu2e already produces a factor of 100 more muons/sec than PSI
				+ HIMB plan at PSI would get a factor of 100, but future a little uncertain
				+ Carol – Already have a design that could be used, optimized over PSI which has to prioritize their neutron program
	+ Carol work for 400 MeV linac might also be good to include in report.
* Action items
	+ Other topics for next meeting
		- Talk from Carol or John on muon production
		- Frozen spin EDMs
		- Check with Gordon on dark matter stuff
	+ Schedule 2 more meetings in April to produce SAC deliverable
	+ Produced prioritized list for May 1
	+ See current priorities under the REDTOP and Mu2e-II sections above.
	+ Other CLFV consult with Carol J. to understand work already done on muon production
	+ Decide if Seaquest should also be included in our precision science planning.