Snowmass 2021 Rare and Precision Frontier

R. Bernstein (FNAL) for co-conveners, Marina Artuso (Syracuse) and Alexey Petrov (Wayne State)

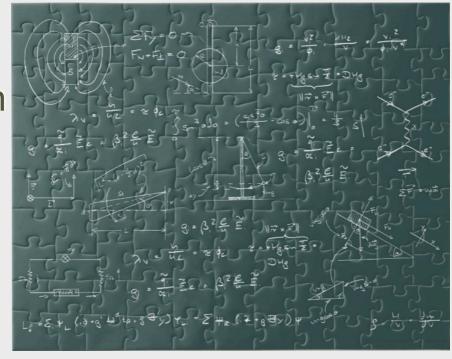
What is the Rare and Precision Frontier About?



- Everyone is interested in rare processes and precise measurements
- This frontier is (speaking as an experimenter) all about focus:
 - experiments designed around specific goals
 - of course this is fuzzy: DM at general purpose experiments, LHCb CKM to antigravity, but we share that quality of targeted studies

We See Ourselves as Interlinked

- Many of our fields require multiple measurements we're not making new particles directly
 - dark matter at accelerators
 - charged lepton flavor violation
 - baryon/lepton number violation
 - CKM unitarity violations
 - lepton non-universality
 - EDMs



disentangling complicated QCD states

Cast Of Characters



Marina Artuso (Syracuse U.)



Alexey Petrov (Wayne State U.)



Bob Bernstein (FNAL)

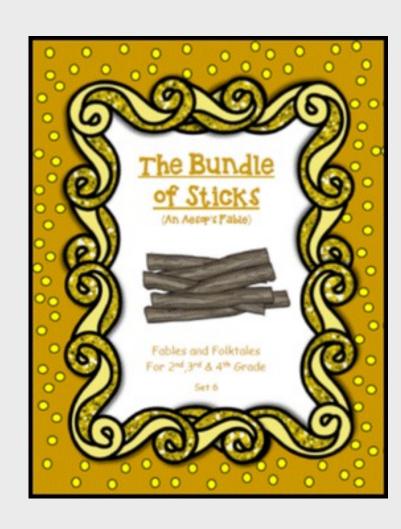
Topical Group		Topical Group co-Conveners	
RF01	Weak Decays of b and c	Angelo di Canto/BNL	Stefan / Arizona
RF02	Strange and Light Quarks	Emilie Passemar/Indiana	Evgueni Goudovski/Manchester
RF03	Fundamental Physics and Small Experiments	Tom Blum/UConn	Peter Winter/ANL
RF04	Baryon and Lepton Number Violation	Pavel Fileviez Perez/CWRU	Andrea Pocar/Amherst
RF05	Charged Lepton Flavor Violation	Sacha Davidson/Lyon	Bertrand Echenard/Caltech
RF06	Dark Sector at High Intensities	Stefania Gori/UCSB	Mike Williams/MIT
RF07	Hadron Spectroscopy	Richard Lebed/Arizona	Tomasz Skwarnicki/Syracuse

+ slack channels, mailing lists, ...

Frontier Calendar: https://snowmass21.org/rare/start

Liaison System

- We talk with other Frontiers and to you
 - EF: Angelo di Canto
 - Neutrino, Accelerator: RHB
 - Theory: Alexey Petrov
 - Community Engagement: Sophie Middleton
 - Cosmic: Susan Gardner
 - Computational: Stefan Meinel



A few Big Issues in RPF

- PIP-II at FNAL: CLFV in Muons? EDMs? CP?
- Accelerator-based High Intensity DM experiments?
- BLV experiments outside of proton decay? e.g. $n\bar{n}$
- Lepton Universality in B decays? LHCb anomalies

Bring ideas!! this is about you making your future happen

What Can You Do To Get Involved?

- Learn:
 - Skim/attend some topical group meetings
 - Check out (SUBMIT!) LOIs:
 - contact authors, add your name, and we'll reload the LOI
- Communicate:
 - Emails, Slack, etc.: <u>snowmass21.org</u>, Slack workspace
 - Contact one of us and we'll help
- Participate:
 - get involved now at the beginning, and you'll have more influence

Links, etc

- Indico for meetings:
 - https://indico.fnal.gov/category/1102/
- LOI's:
 - https://snowmass21.org/rare/start
- Contact:
 - <u>rhbob@fnal.gov</u> or use information at <u>snowmass21.org</u>