

Welcome to

# Meeting VIII



# What We're Supposed to Do

- ▶ ***Double- $\beta$  decay***
- ▶ EDMs
- ▶ Dark matter
- ▶ Parity violation

# Milestones

Year 5

- ▶ Beginning of QMC approach to  $^{76}\text{Ge}$ . Still a ways off.
  - ▶ Completion of study of SRG evolution of  $\beta\beta$  operators in three-nucleon space. Use of results to re-evaluate all many-body  $\beta\beta$  calculations. 😊
  - ▶ CCEI and IM-SRG shell-model calculations of  $\beta\beta$  decay in  $^{76}\text{Ge}$ . Uncertainty quantification. Canadian IMS-SRG group about to publish something
  - ▶ Shell-model (Bigstick) calculation of Schiff moment of  $^{199}\text{Hg}$ . No good interaction.
  - ▶  $\beta\beta$  matrix elements from GCM+DFT. Uncertainty quantification. This has become IM-GCM.  $^{48}\text{Ca}$  done.  $^{76}\text{Ge}$  in progress. Good uncertainty quantification still requires work. Gotta somehow get to Te, Xe.
  - ▶ Large-scale survey of Schiff moments for atomic EDM studies. Uncertainty quantification. In the works?
  - ▶ Lattice calculation of the neutron EDM induced by EDMs of the up, down, and strange quark. ?
  - ▶ Calculation of two-nucleon dark-matter matrix elements in continuum limit at physical pion mass. ?
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- ▶ NCSM calculations of  $^{18,19}\text{F}$  PNC matrix elements. ?
  - ▶ Shell-model calculations of inelastic dark matter responses to constrain otherwise hidden interactions. ?

# Program

DBD-Collaboration Spring Meeting, 2020

*Schedule for participants in Eastern time zone*

Thursday, 5/28

11:20 **Jon Engel:** Welcome, discussion of final year

11:30 **Steve Elliott:** Update on double-beta experiments

12:00 **Kyle Wendt/Too Coello Perez:** BB decay and error quantification in very light systems

12:30 Break

1:00 **Saori Pastore:** Weak processes in light nuclei

1:30 **Wick Haxton:** Developments in HOBET

2:00 "Lunch" break

3:30 **Ragnar Stroberg:** BB decay in the SM-IMSRG

4:00 **Jiangming Yao:** BB decay in the IM-GCM

4:30 break

5:00 **Sam Novario:** BB decay in coupled clusters

5:30 **Robert Basili:** Benchmarking the NCSM and IM-CGCM in light nuclei

Friday, 5/29

11:30 **Kaori Fuyuto:** Double-beta decay with sterile neutrinos

12:00 **Juan Vaquez Carmona:** Long-range contributions to BB decay, probes of the LR-symmetric model, EDMs in diamagnetic systems

12:30 break

1:00 **Michael Ramsey-Musolf:** BB decay, the LHC, and leptogenesis

1:30 **Vincenzo Cirigliano:** Towards estimating the EFT BB contact

2:00 "Lunch" break

3:30 **Amy Nicholson:** Developments in LQCD for BB decay

4:00 **Andrea Schindler:** The neutron EDM in LQCD

4:30 **Mihai Horoi:** Neutrino properties and BB decay

5:00 *Discussion session on final year, deliverables*

## Main Issue to Discuss

How do we make good on our promises?

**In particular, how are we going to assign uncertainty?**

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**Well, anyway, enjoy the meeting!**