NSCL Update:
Operation in FY2021

October 1, 2020 – September 30, 2021

Bradley M. Sherrill – NSCL Director

MICHIGAN STATE
UNIVERSITY

Outline

Thanks for the FRIBUO for hosting this Zoom meeting

Topics:

- NSCL Code of Conduct
- Brief NSCL Update
  - CCF and ReA3
  - Cyclotron Stopper
  - ReA6
- NSCL transition to FRIB – Update on Timeline
- NSCL Operation in FY21 (Oct 2020 to Sep 2021)
- Special NSCL PAC for ReA6

NSCL Code of Conduct

Goal: Welcoming environment where everyone can do their best work.

Users, visitors, students and employees at the FRIB Laboratory share a common interest—to contribute to society through scientific discovery. This venture is best conducted when everyone behaves in a welcoming and respectful manner. Creating a collegial, inclusive, safe and supportive environment is everyone's responsibility.

Harassment and discrimination are prohibited and the FRIB Laboratory is committed to providing an environment that is welcoming for everyone. Anyone who witnesses a breach of this code of conduct is strongly encouraged to notify a member of Laboratory management or the FRIB diversity advisory committee (Andreas Stolz, Chair).

Users can report harassment to the Manager for User Relations, Laboratory Management, or by calling the MSU Misconduct Hotline at 800-763-0764 (anonymous calls can be made 24 hours a day, 7 days a week). Users can also submit feedback to the FRIB User website: http://fribusers.org/comments.html.

The MSU harassment and RVSM policies can be found at:

MSU Anti-Discrimination Policy

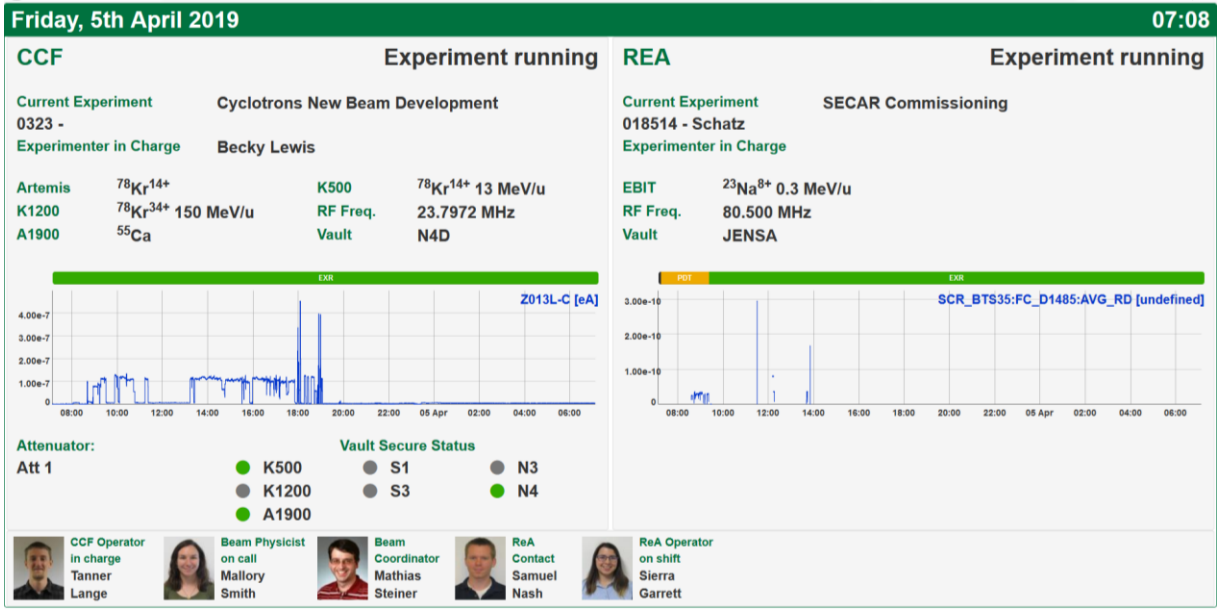
MSU Policy on Relationship Violence and Sexual Misconduct

Users who violate the code or have been found to have engaged in harassment may be denied access to the facility.

NSCL Operation: Routinely Runs Two Simultaneous Experiments

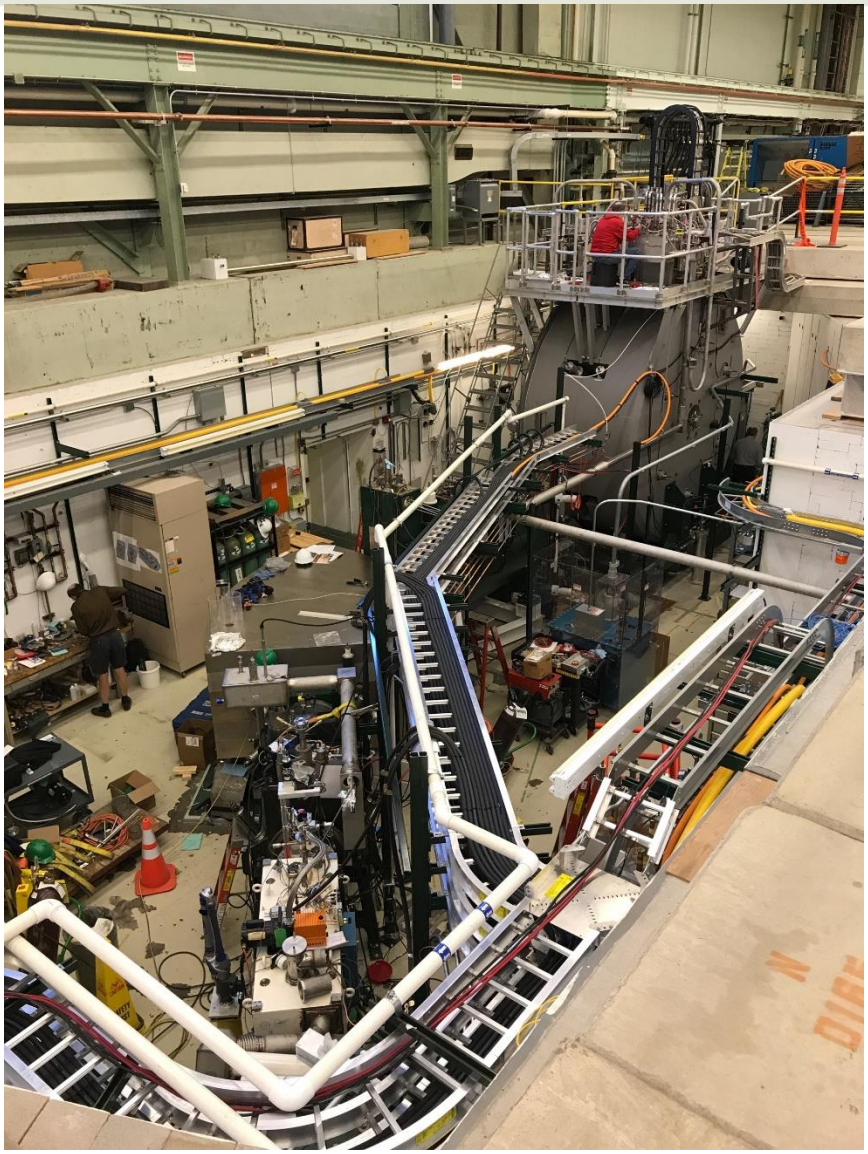
- CCF operated 5,045 hours in FY19
- ReA3 operated 1,860 hours in FY19
- Pictures at the right shows CCF and ReA3 running a the same time
- Last week CCF+ReA3 ^{85}Br experiment used ACGS
- ^{85}Br rate was 300,000/s* (beam list was 22,000/s) ACGS efficiency estimated to be 50%

* Gain may not be same for all beams



Key Improvements for Stopped Beams

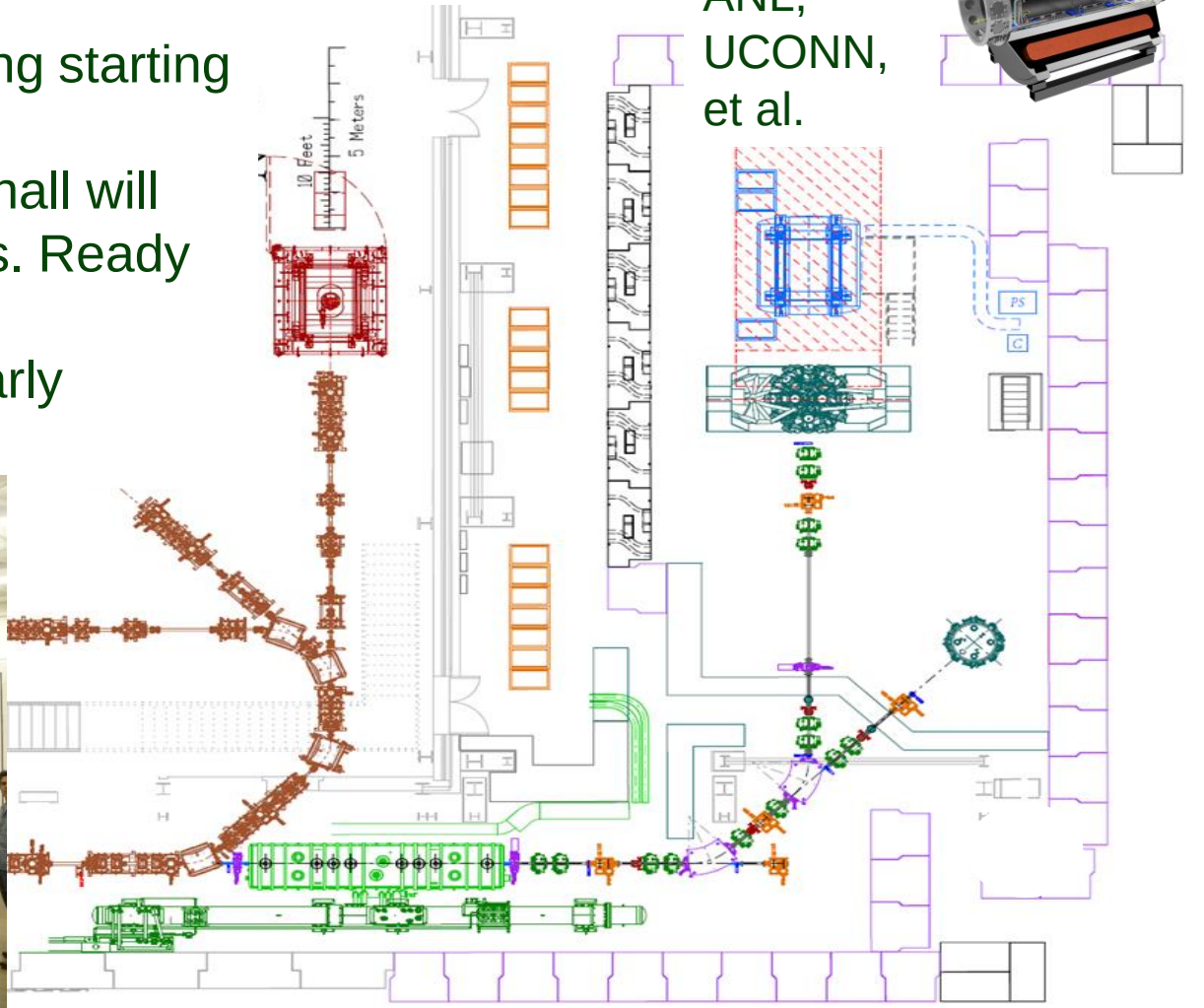
- Cyclotron Stopper installation in N2/3 is nearly complete
- Cyclotron Stopper will ready for operation in November 2019
- First test with beam in December
- Possible up to 10x gain for lighter beams



ReA6 Construction and ReA3

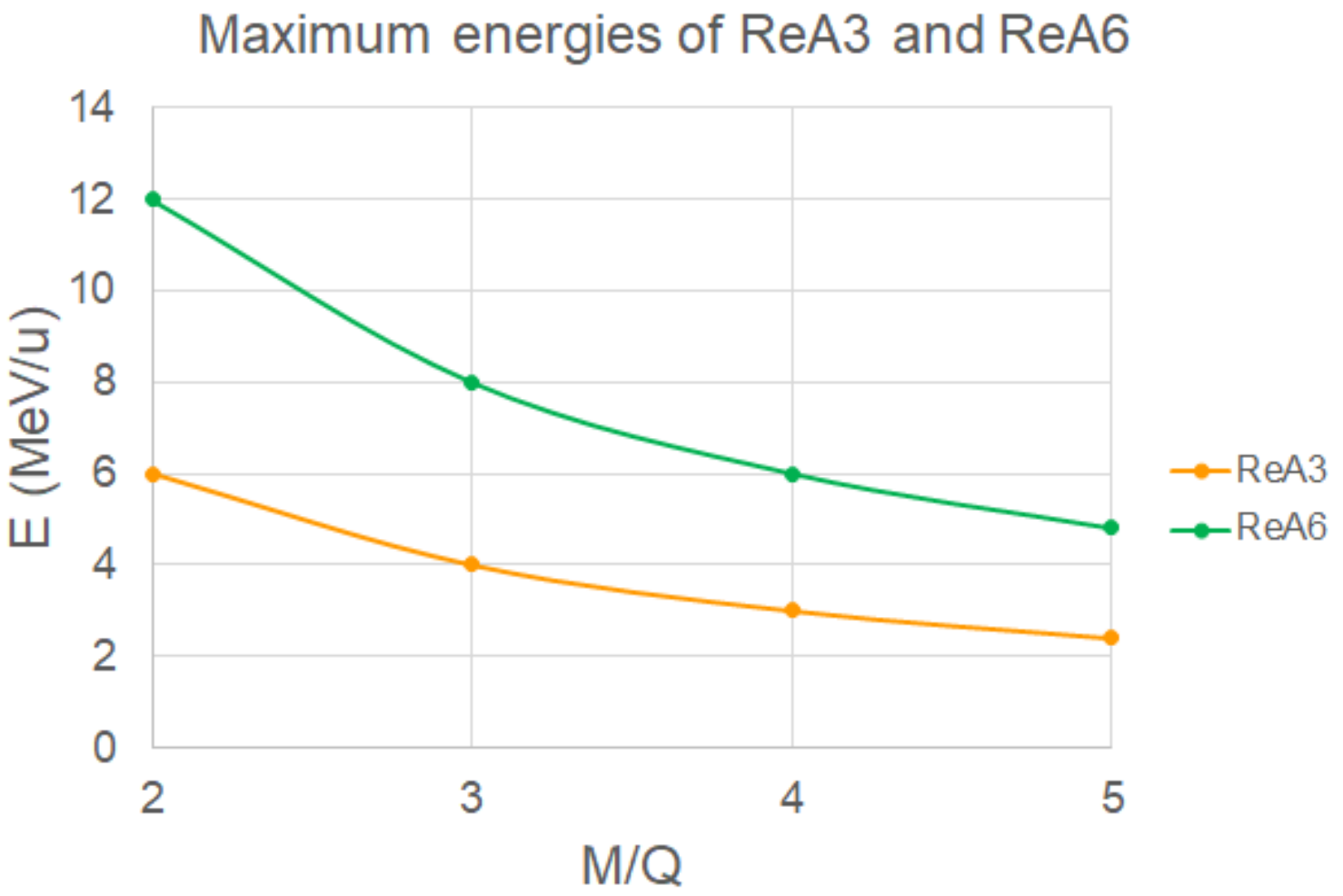
- ReA3 is operational
- ReA6 construction is ongoing
- We expect ReA6 commissioning starting in later 2020
- The initial ReA6 experimental hall will have two experimental stations. Ready in 2020.
- SECAR commissioning and early completion in 2020

SOLARIS
ANL,
UCONN,
et al.



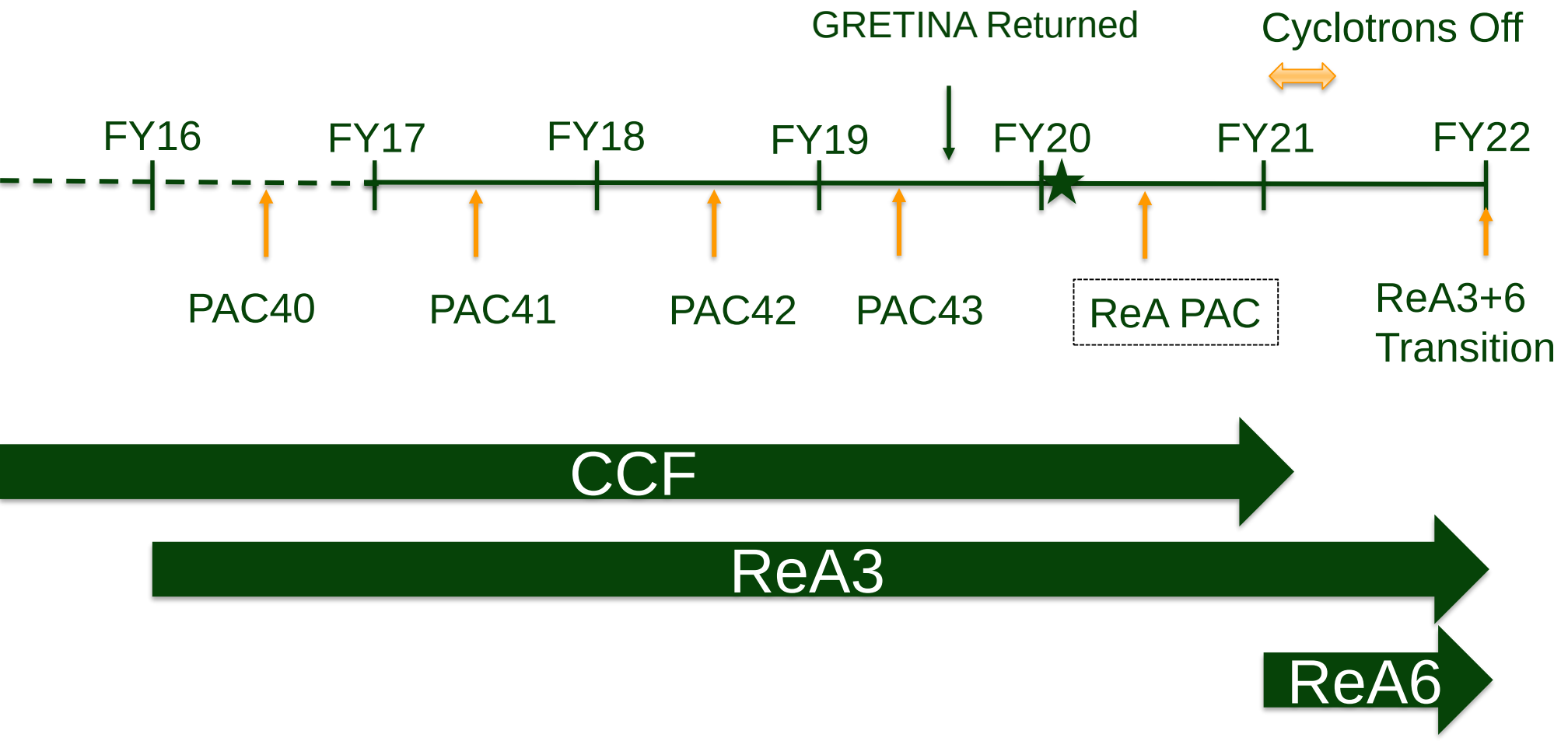
ReA6 Cryomodule

ReA3 and ReA6 Nominal Maximum Energy



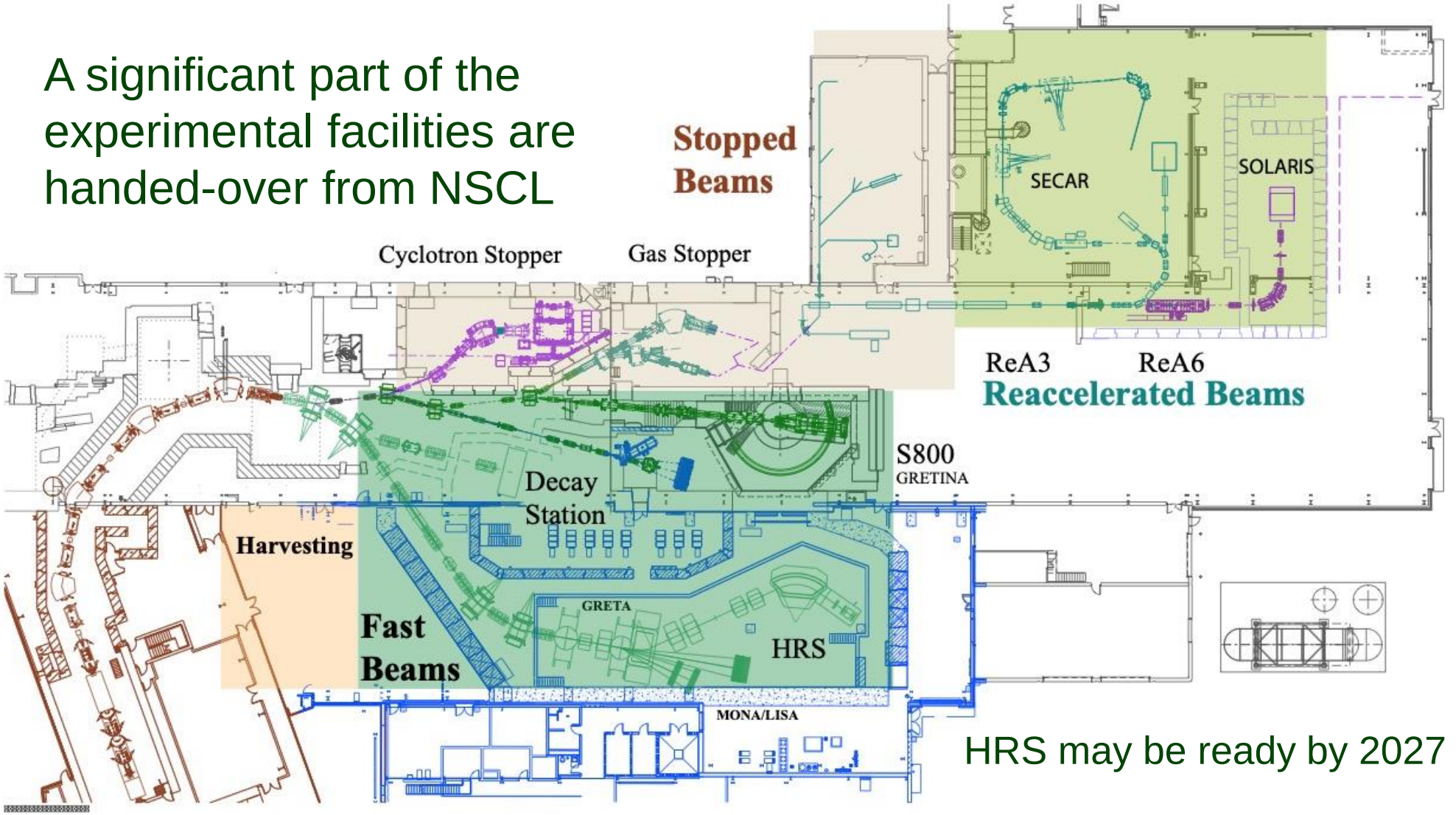
NSCL Transition to FRIB Timeline

Operation of ReA3 and 6 in FY21 has been approved by NSF



FRIB and Experimental Areas

A significant part of the experimental facilities are handed-over from NSCL



HRS may be ready by 2027

NSCL Transition to FRIB and Operation in FY21

- FRIB will be ready for reconfiguration of the A1900 in the first quarter of FY2021 – The current best guess is December 2020
- FRIB User program will begin in early 2022
- FRIB Proposal Workshop May 4-8, 2020 at FRIB – stay tuned for more details
- NSF has approved operation of CCF in FY21 to complete PAC approved experiments
- We have approval from NSF for operation of ReA Stand-Alone for the remainder of FY21
- ReA Stand-Alone will provide around 4,000-6,000 hours of beam time in FY21

ReA PAC to Consider Stand-Alone Experiments

- NSCL will have a call for proposals for a ReA PAC to be held approximately 1 March, 2020
- The call will be announced within the next two weeks. Proposals will be due on 9 January, 2020
- The ReA PAC will consider experiments for stand-alone ReA3 and ReA6 operation in FY21 (4,000 hours to be allocated)
- Proposals can be submitted for stable and long-lived rare isotope beams (see the call for proposals for details)
  - A beam list of stable isotope beams will be placed on the NSCL website
  - We will develop radioisotope beams of ^{7,10}Be, ^{48,49}V, and ^{55,59}Fe
  - Nominal beam intensity will be 10^6/s
  - Other beams may be possible. Please contact Jill Berryman and we will make a quick evaluation to determine if it is feasible. If so we will add it to the posted beam list.
  - Users will have until around 1 December to request evaluation of beams
- Approval will be based on the product of science value and feasibility

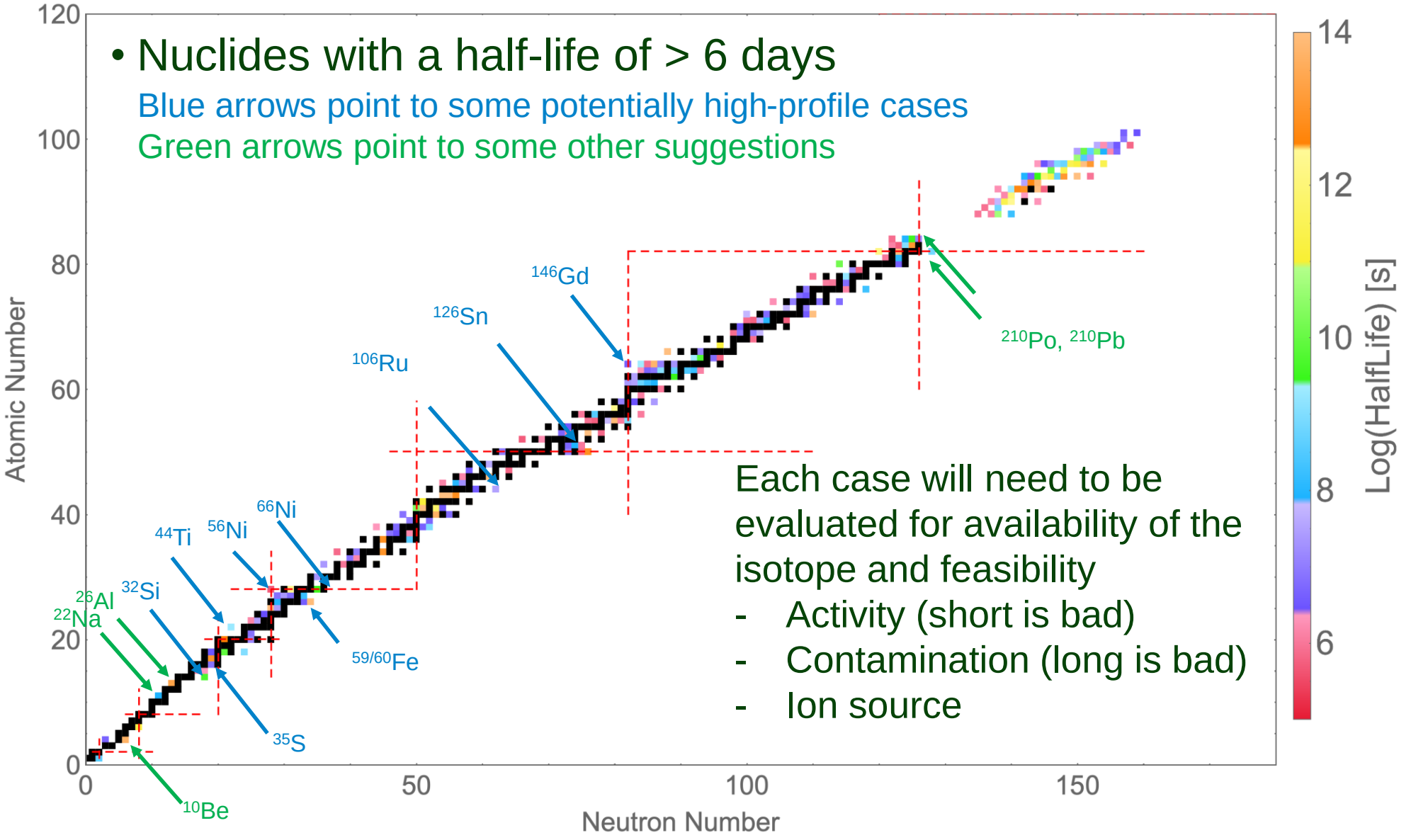
Overview of the Potential Cases

Adapted from B. Kay, C. Hoffman

- Nuclides with a half-life of > 6 days

  Blue arrows point to some potentially high-profile cases

  Green arrows point to some other suggestions



Each case will need to be evaluated for availability of the isotope and feasibility

- Activity (short is bad)
- Contamination (long is bad)
- Ion source

Disclaimer

- Disclaimer: We can not a this time guarantee any beam. In the end we may only develop a few of the beams requested
- For approved experiments, we will will provide an estimate of the beam feasibility
- Reminder: We plan to develop ^{7,10}Be, ^{48,49}V, and ^{55,59}Fe
- Please contact Jill Berryman for evaluation of other beams
- Development of long-lived radioisotope experiments will likely be useful for FRIB

Summary

- NSCL Code of Conduct
- NSCL Update
  - CCF and ReA3
  - Cyclotron Stopper
  - ReA6
- NSCL transition to FRIB – Update on Timeline
- NSCL Operation in FY21, Oct 2020 to Sep 2021
- Special NSCL PAC for ReA6

Thanks again to the FRIBUO.

Please send feedback about this webinar to the FRIBUO Executive Committee or Jill Berryman.