

ReA Solenoidal Spectrometer Projects

Si arrays, active targets, and beyond

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What is the goal of this meeting?

(1) Initiate a project and collaboration that develops a new solenoid-based multi-detector spectrometer for FRIB/ReA that capitalizes on:

- *4-T solenoid acquired by ANL***
- *Si array techniques for solenoids***
- *active target and TPC technologies***
- *ReA and the ReA Energy Upgrade***
- *high B-field auxiliary detectors***

(2) Provide impetus for:

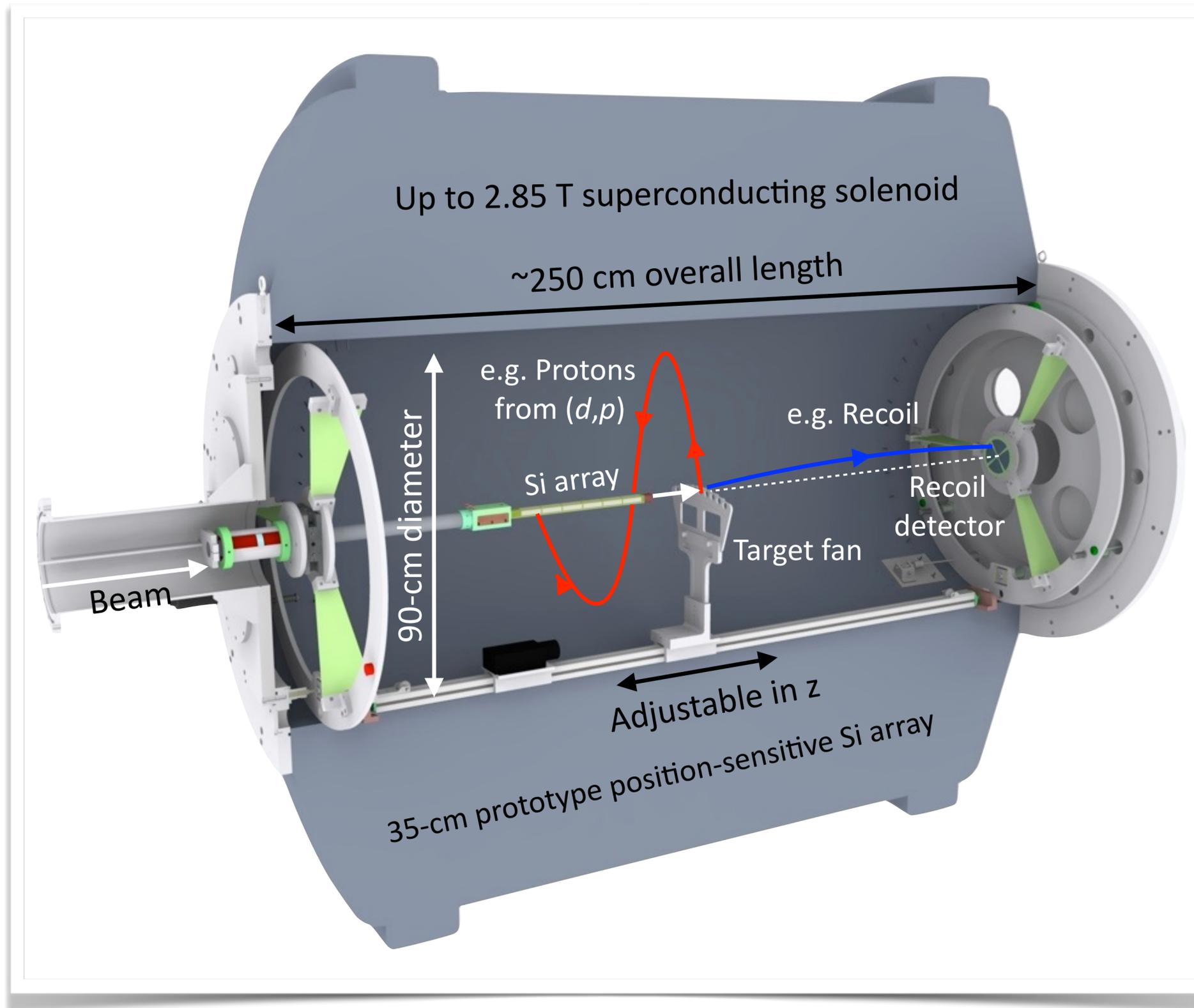
- *preparation of a white paper***
- *formation of early-stage working groups***

The "FRIB/ReA" solenoid



"OR66" 4-T solenoid

Si arrays in solenoidal fields



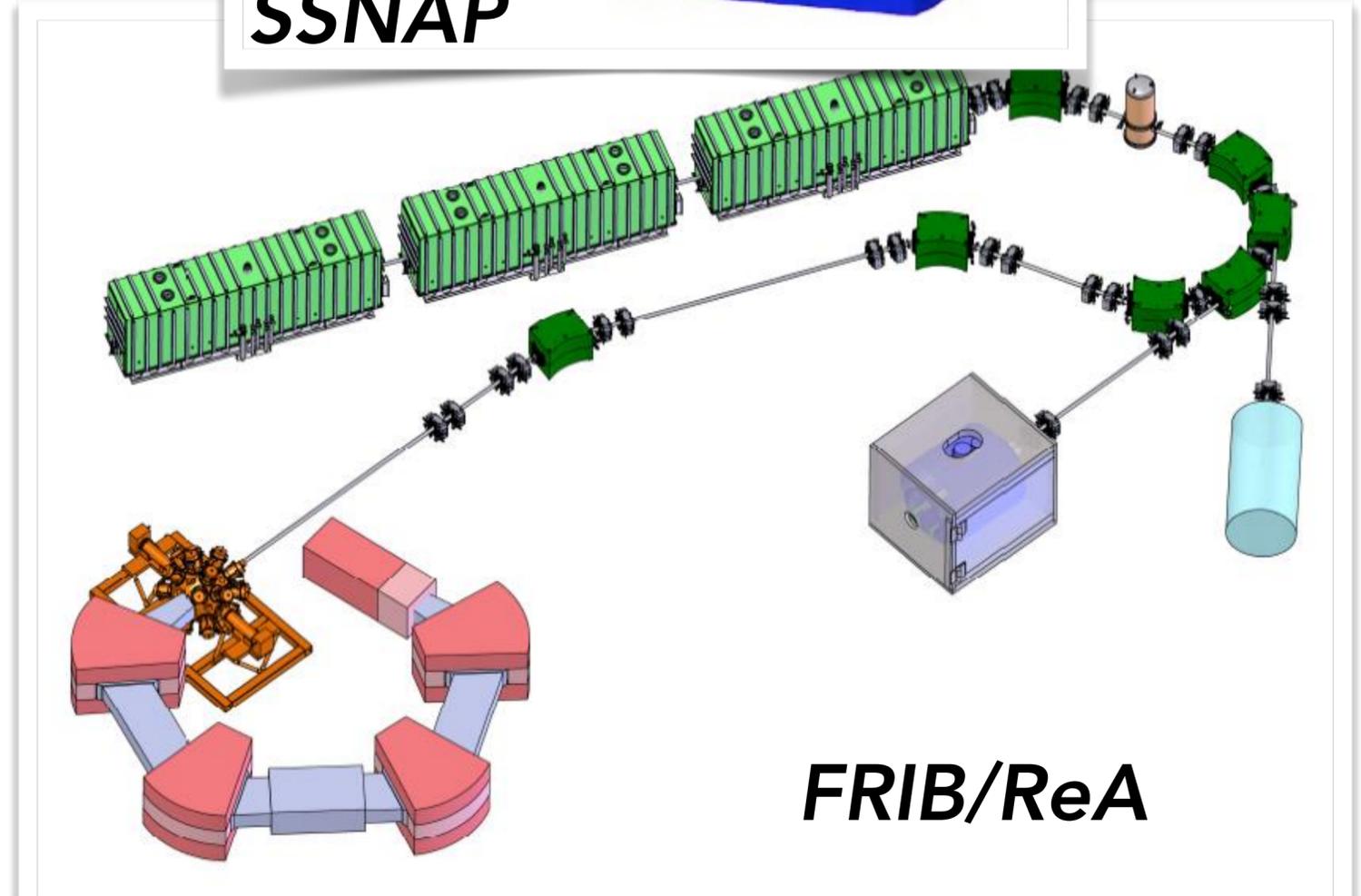
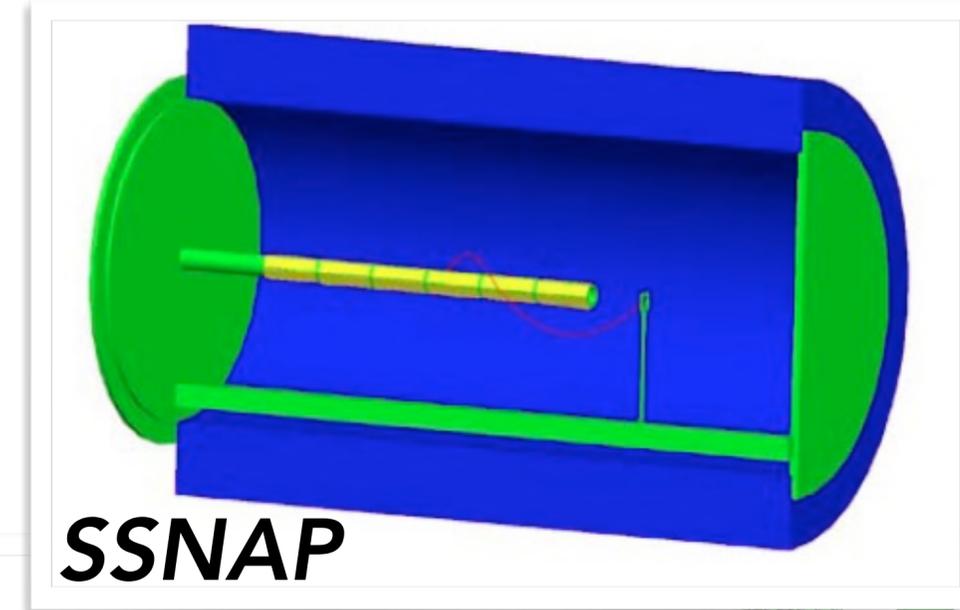
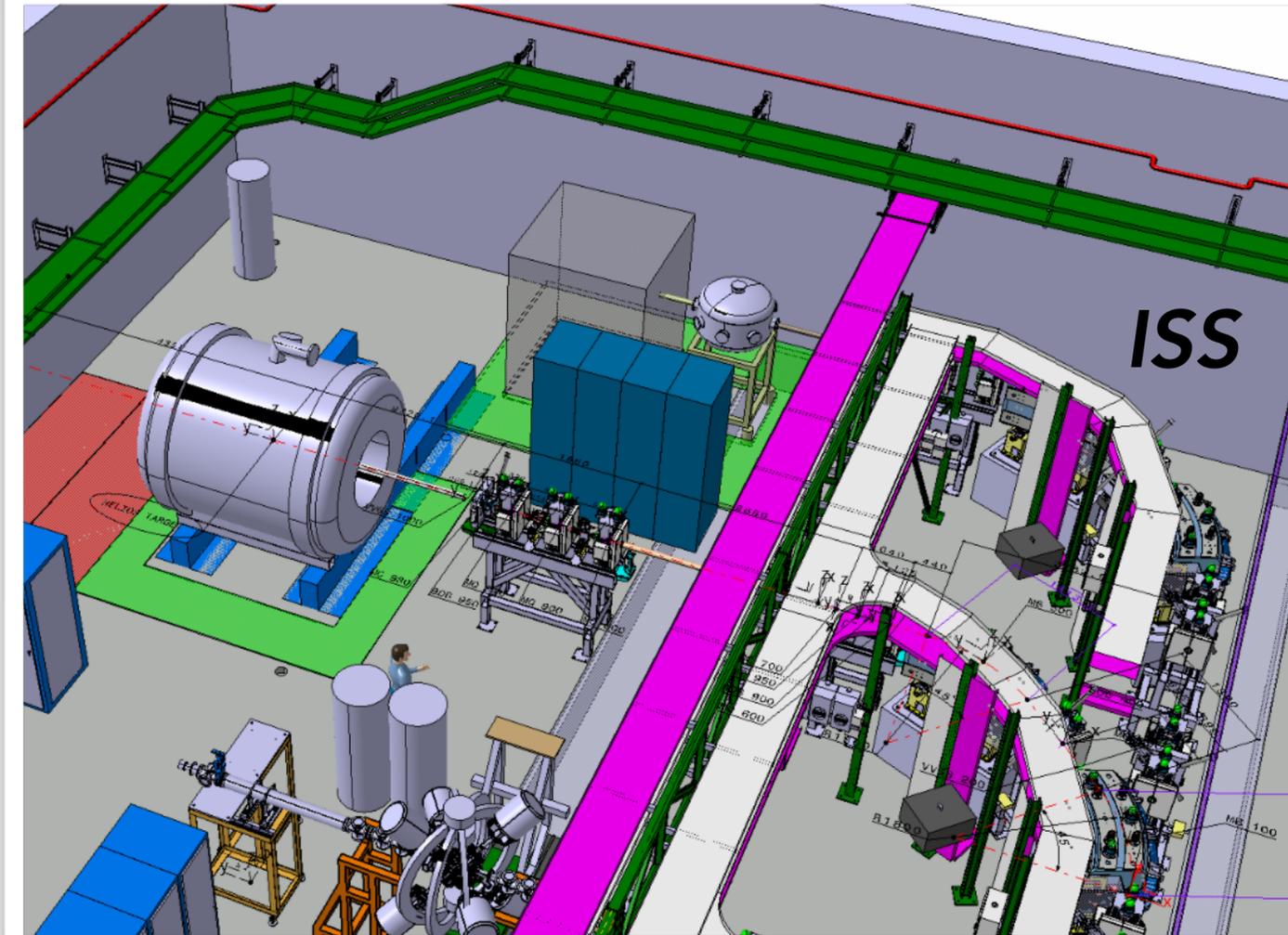
**Ample experience with
the *HELIOS* spectrometer**

**Second generation array
and digital electronics**

**Gamma-ray detection,
various recoil schemes,
targets (solid, gases,
tritium)**

**Beams from $A \sim 10-140$
from 10^4 to 10^9 Hz**

Si arrays in solenoidal fields



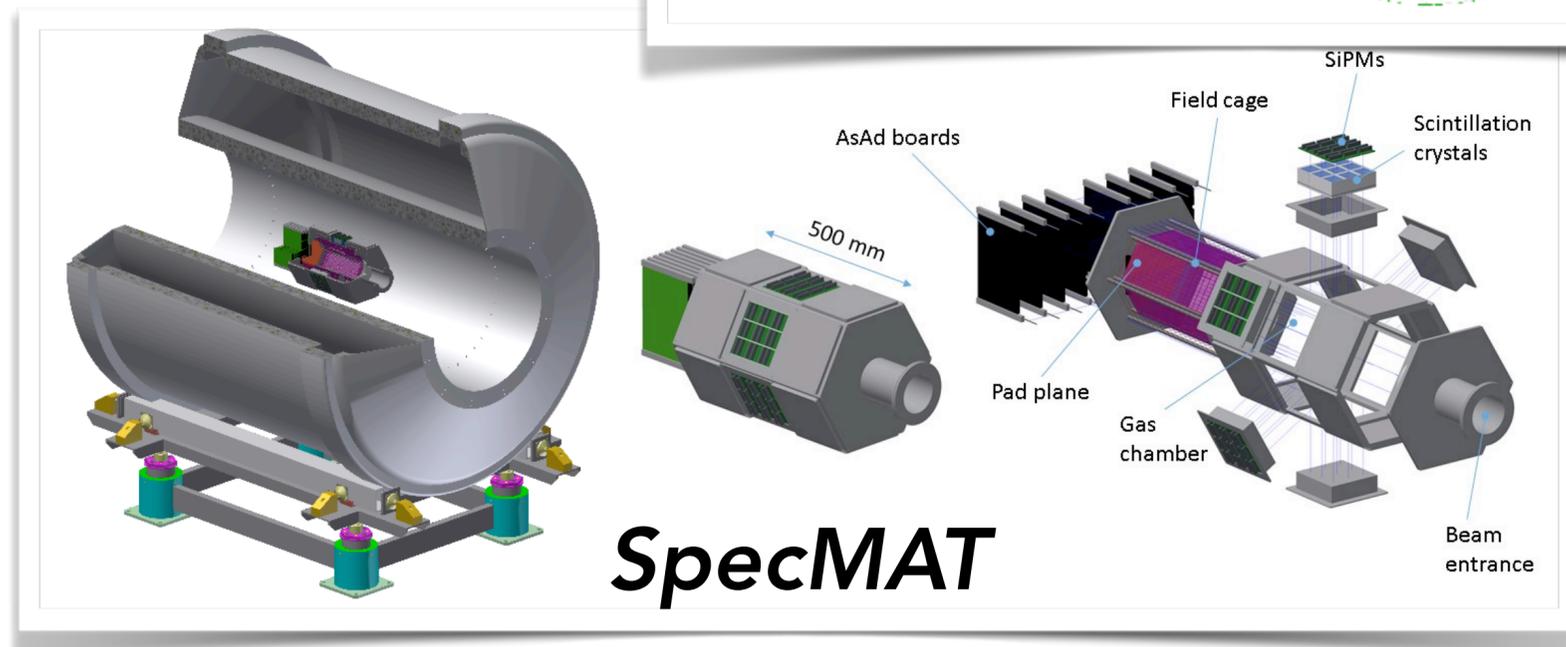
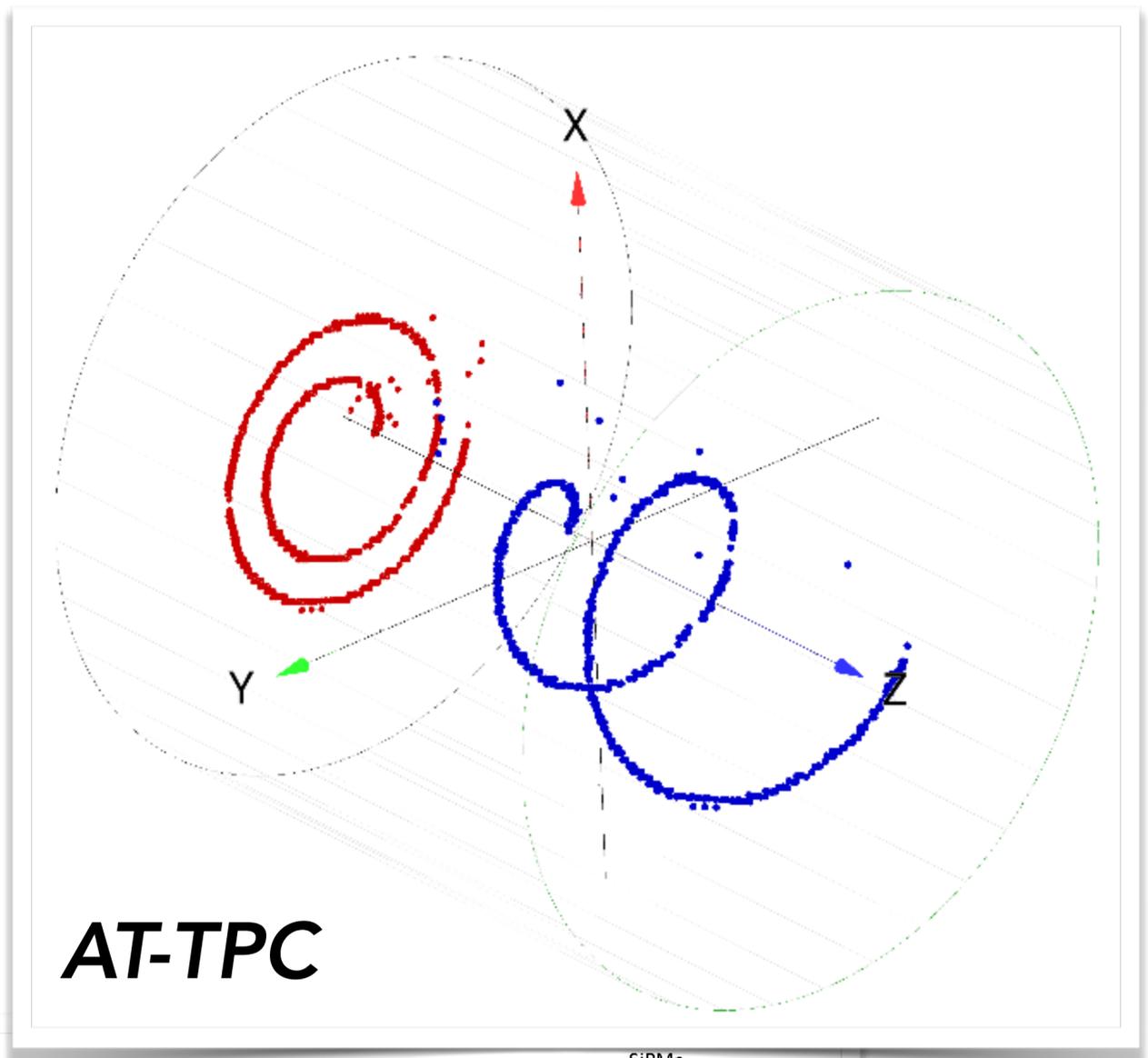
Active targets and TPCs

Major programs already underway

(active targets have a long history)

An ideal complementary instrument to a Si-array device, sharing the same solenoid

Can exploit weak ($<10^4$ pps) beams

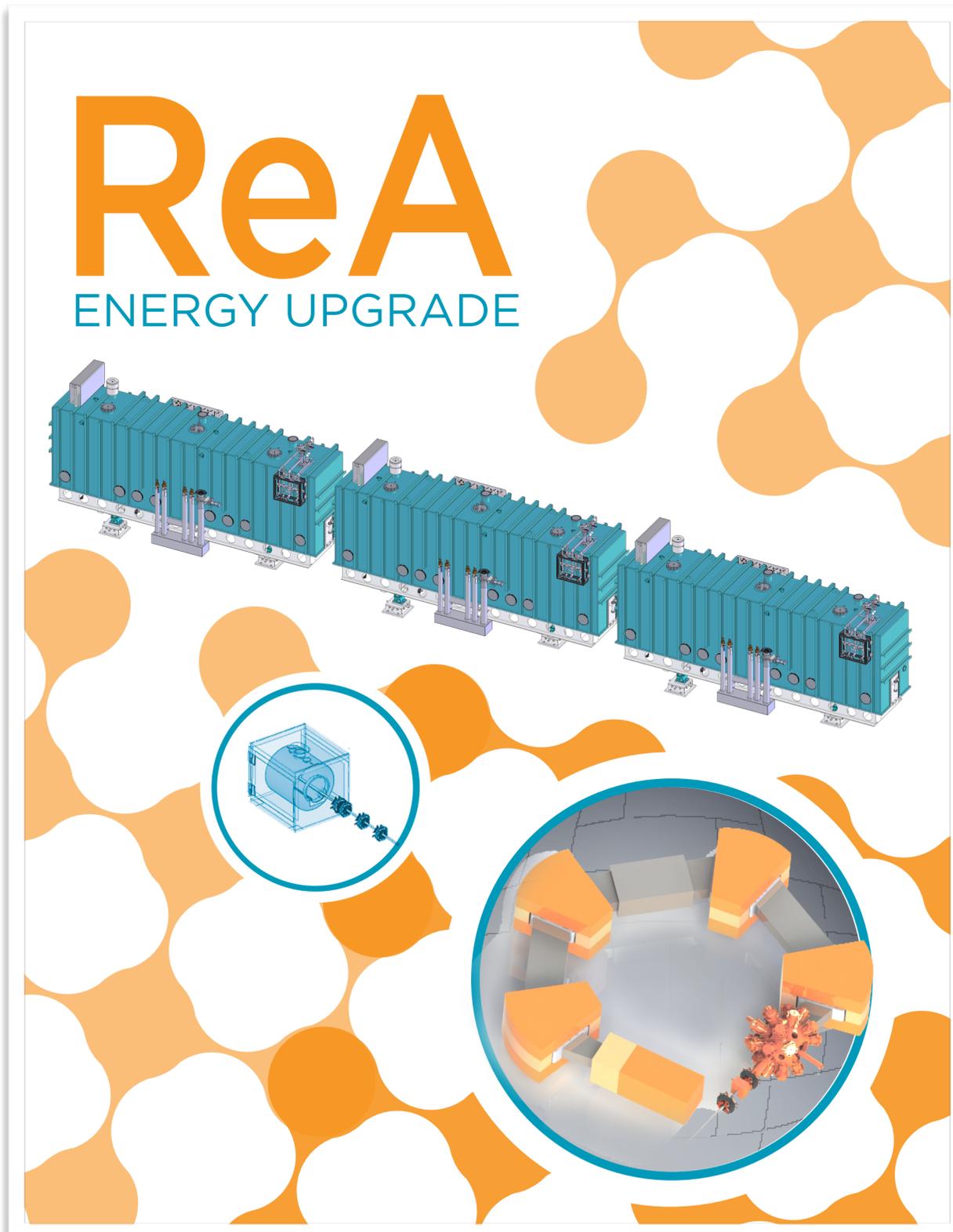


ReA and the ReA Energy Upgrade

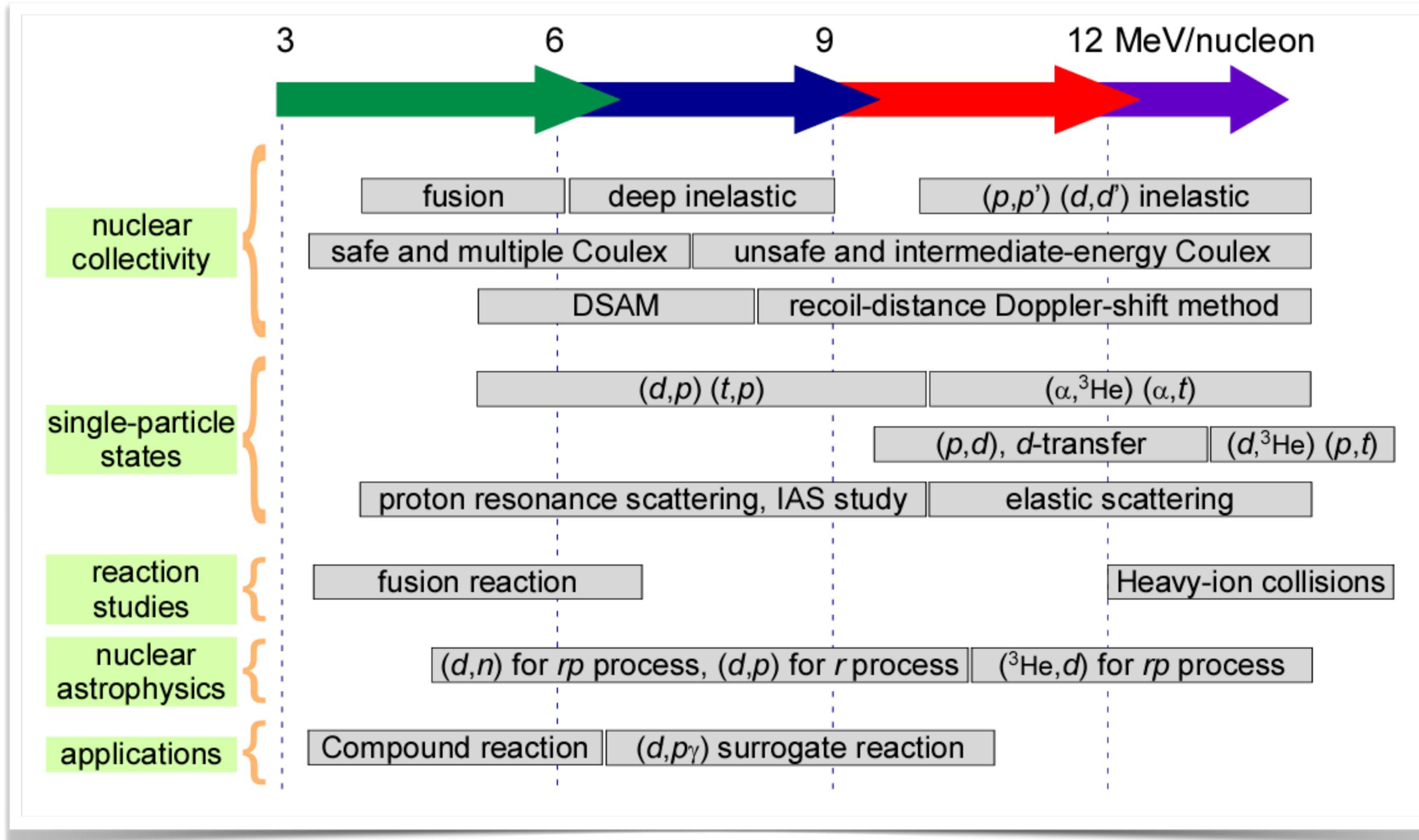
White paper prepared in advance of the 2016 Low-Energy Community Meeting following a 1-day meeting in 2015

Lays out the outstanding scientific opportunities for 6-12 MeV/u beams

(hence today's focus is dominantly on instrumental aspects)



ReA and the ReA Energy Upgrade



Program

Morning

SESSION I

Chair: Birger Back (ANL)

8:45	Welcome	K. HAFIDI	ANL
8:50	Introduction	B. P. KAY	ANL
9:00	HELIOS @ ATLAS	A. H. WUOSMAA	UConn
9:30	ReA Upgrade	H. IWASAKI	NSCL
10:00	AT-TPC	D. BAZIN	NSCL

10:30 AM–11:00 AM BREAK

SESSION II

Chair: A. H. Wuosmma (Uconn)

11:00 AM	ISS @ HIE-ISOLDE	S. J. FREEMAN	Manchester
11:25 AM	The SpecMAT Project	R. RAABE	KU Leuven
11:45 AM	Apollo and γ -ray measurements at HELIOS	J. WINKELBAUER	LANL
12:05 PM	The SSNAP spectrometer	P. O'MALLEY	Notre Dame

12:25 PM–2:00 PM LUNCH

Afternoon

SESSION III

Chair: D. Bazin (NSCL)

2:00 PM	Fast beams	B. P. KAY	ANL
2:15 PM	The ISS Si array	S. J. FREEMAN	Manchester
2:30 PM	Analysis of spirals	W. MITTIG	MSU
2:45 PM	State of the art targetry	K. CHIPPS	ORNL
3:00 PM	The ANL Si array and DAQ	S. KUVIN	UConn
3:15 PM	Auxiliary charged-particle detection	S. T. MARLEY	LSU

3:30 PM–4:00 PM BREAK

SESSION IV

CHAIR: K. Chipps (ORNL)

4:00 PM	Gamma-ray probes and transfer reactions	A. COUTURE	LANL
4:15 PM	NP pairing and transfer reactions	A. O. MACCHIAVELLI	LBNL
4:30 PM	Isomer beams and transfer reactions	D. SANTIAGO-GONZALEZ	LSU
4:45 PM	Summary and Discussion	C. R. HOFFMAN	ANL

6:00 PM– FINISH (ATLAS tour available)

Next steps

Following the meeting we will:

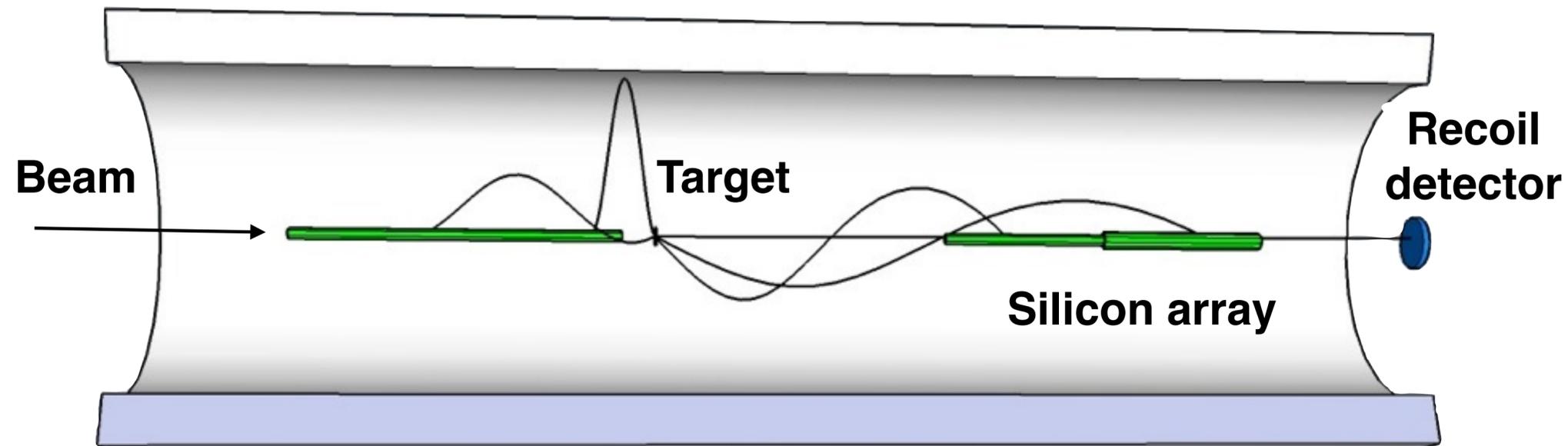
- ➔ prepare a white paper in advance of this years Low-Energy Community Meeting (Aug 3-4, Argonne), which defines the scope, timescale, and practicalities of the project
- ➔ *solicit your input and endorsement*
- ➔ *formation of early-stage working groups to tackle the moving of the ANL solenoid to MSU and early set up*

Some things to think about before the discussion

The project needs a name:

- *How about we vote during the discussion session on all suggestions left on the board by the end of afternoon coffee?*

Is there anything missing? Are we being ambitious enough?



Some logistics

INTERNET

R-150 is available as a quiet area

Lunch will be in the cafeteria

Please see me, or any of the conference secretaries (out front), if you need assistance

Dinner (see theory group website for ideas)

Meeting PHOTOGRAPH

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Theory Group

- Staff Administration Positions
- Theory Seminar
- Argonne v18 Spectroscopic overlaps Nuclear density Nucleon momenta
- Workshops 2017
 - 1) VI International Workshop on Non Perturbative Aspects of Field Theories: QCD and Hadron Physics.
 - 2) Third Sino-Americas Workshop and School on the Bound-State Problem in Continuum QCD
- Previous Years
 - 2016 Midwest Theory Get-Together
 - Local Restaurants**

28th Annual Midwest Theory Get-Together 2015

PHYSICS

Twentieth anniversary of Argonne V18 Celebration, March 27, 2015