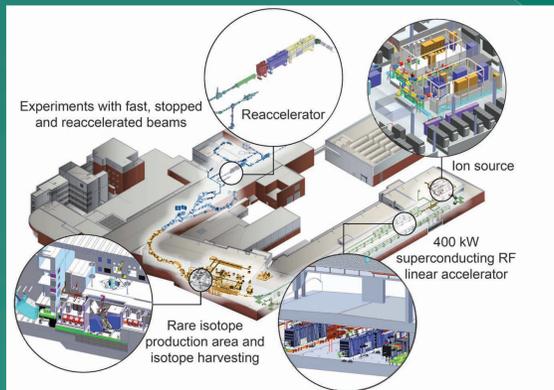


CATCH ME IF YOU CAN: T(R)AP-DANCING WITH THE ELUSIVE RARE ISOTOPES

BROADENING-PARTICIPATION MISSION: CREATE PUBLIC AWARENESS & DEEPEN LEARNING ON NUCLEAR PHYSICS & THE ROLE OF MICHIGAN STATE UNIVERSITY'S FRIB (Facility for Rare Isotope Beams) AS A WORLD-LEADING SCIENTIFIC LAB



PROJECT DESCRIPTION

The "Dance of the Rare Isotope Beams" is a collaborative effort between various units at MSU to demonstrate that art can be used to facilitate scientific understanding. Both the arts and science involve research, discovery, imagination, observation, and interpretation. We feel there is untapped potential in art-science collaboration with particular benefits in terms of public understanding of the true nature of science as a discipline of process, inquiry, and discovery rather than a collection of facts and principles. The NSCL and FRIB are scientific resources at MSU where innovative knowledge of nuclear physics is being produced that has great potential in transforming lives and benefiting society, but efforts have to be made to translate this science into concepts that the public can easily understand.

To assist with this effort the MSU partners will be collaborating with Dance Exchange (www.danceexchange.org), a nationally known dance organization that has been at the cutting edge of translating scientific concepts and bringing them to public audiences through dance. Their previous performances involving dance and science include "The Matter of Origins," that combined choreography, media, and conversation to address the physics and philosophy of beginnings, and to probe into the mind's capacity to discover and comprehend the workings of matter at vast extremes of scale, from the quantum to the cosmic.

Research conducted at MSU's Center for Community Economic Development (CCED) and funded by the National Science Foundation indicated that attendance at the dance performance followed by a discussion with audience members significantly increased scientific knowledge, interest, attitudes and behavior. The "Dance of the Rare Isotope Beams" will be used to translate the research that is producing rare isotopes at MSU into concepts of nuclear physics understandable by the general public. In creating the dance, local school districts, teachers, students and dance clubs will be involved. Science involved and likely to be produced at FRIB will be made available to the local community and the people of the State of Michigan. It is hoped that by using FRIB as a community resource to teach concepts of nuclear physics to general audiences through the medium of dance, this project will stimulate creative ideas for using the rare isotopes and the processes used to make them as possible engines for stimulating local economic development.

RESEARCH QUESTIONS

How does integrating an art-form (dance) with an academic subject (nuclear physics) deepen and enhance public learning?

How do the arts increase student engagement in science learning?



FACILITY FOR RARE ISOTOPE BEAMS

The Facility for Rare Isotope Beams (FRIB) will be a new national-user facility for nuclear science, funded by the Department of Energy Office of Science (DOE-SC), Michigan State University (MSU), and the State of Michigan. FRIB will provide intense beams of rare isotopes (that are, short-lived nuclei not normally found on Earth). FRIB is currently under construction and will cost \$730 million. When operational in 2022, FRIB will enable scientists to make discoveries about the properties of these rare isotopes in order to better understand the physics of nuclei, nuclear astrophysics, fundamental interactions, and isotopes for society.

IMPORTANCE of FRIB

FRIB is important for the world community. FRIB is a unique scientific tool that scientists from around the world will use for their cutting edge research.

FRIB research is important for America as it will lead to improved quality of life - Health, Energy, National Security & will maintain American leadership in rare isotope science.

FRIB is important for Michigan economy as it will generate construction & knowledge economy jobs and create \$1 billion in economic activity.

FRIB is important for MSU to maintain leadership in rare-isotope science and in nuclear physics, and recruit and train the next generation of nuclear-scientists.

ACKNOWLEDGEMENT

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MSU Partners

- National Superconducting Cyclotron Laboratory
- Facility for Rare Isotope Beams
- Center for Community and Economic Development
- Wharton Center for Performing Arts
- Office of the Vice President for Research & Graduate Studies

COMMUNITY PARTNERS

Dance Exchange

breaks boundaries between stage and audience, theater and community, movement and language, art and science

Schools

Teachers
Students
Parents

Local dance clubs

PROJECT PARTICIPANTS

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