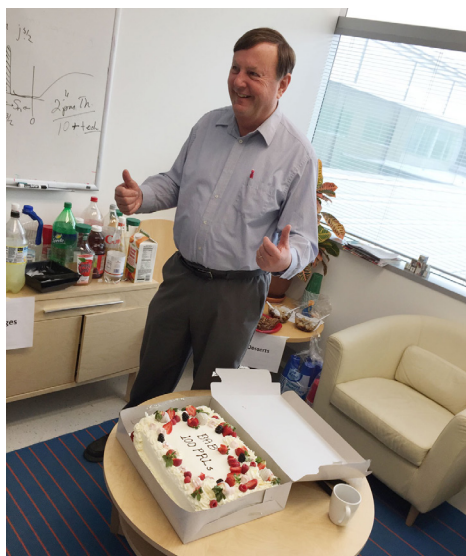


A MILESTONE - 100 PHYSICAL REVIEW LETTERS ARTICLES FOR B. ALEX BROWN

Contributed by M. Hjorth-Jensen, A. Gade

On Tuesday, NSCL's theory group celebrated a remarkable milestone accomplished by one in their midst. Physical Review Letters (PRL) is the selective flagship journal for the field of physics where high-impact research articles are published after rigorous peer review that focusses not just on quality and impact but also on the broad, general interest of the presented results. In the fall of 2017, B. Alex Brown published his 100th PRL article (presently he has reached 102) on [Mirror Charge Radii and the Neutron Equation of State](#). This is a remarkable and unique accomplishment in our field. Many of these articles are single-author ones and convey often fascinating and deep insights about the physics of atomic nuclei and dense matter.



The 100th article is one such example, where the differences in the charge radii of mirror nuclei are shown to be proportional to the derivative of the neutron equation of state and the symmetry energy at nuclear matter saturation density. This derivative is important for constraining the neutron equation of state for use in astrophysics. Another recent [PRL gem from Alex dates back to 2013](#). There the size of the pairing gap and its smallness are explained using intuitive arguments based on a nuclear shell-model analysis. At the end, after complicated experiments and calculations, our aim is indeed to try to explain what we observe in terms of

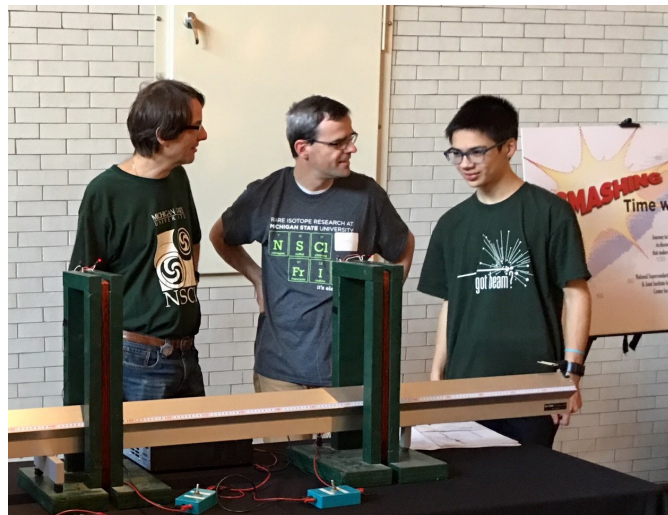
the underlying forces and laws of motion, hopefully in terms of simple physical mechanisms.

The picture shows Alex next to a cake served in his honor following a theory group pot luck. Experimenters were invited to the celebration, too, emphasizing the importance of Alex' work for the local experimental group. Most NSCL research groups collaborate frequently with Alex, who not only provides theory calculations but also majorly contributes to the interpretation and discussion of the experiment-theory comparison that is needed to push the field forward and uncover new opportunities.

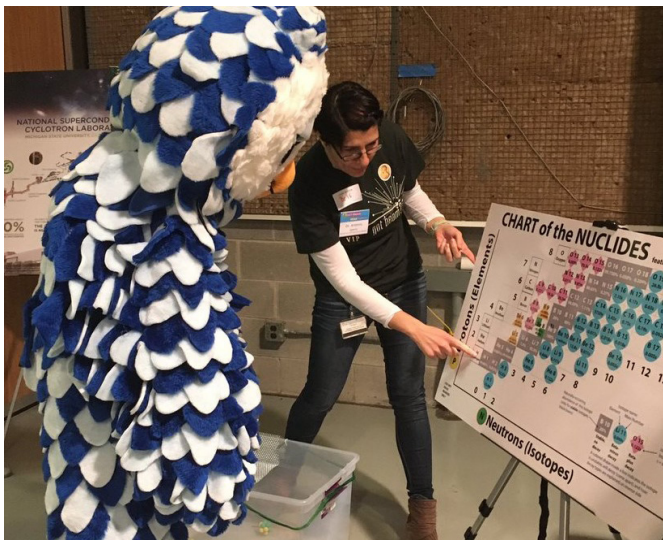
LABORATORY OUTREACH ACTIVITIES

Contributed by Becky Lewis and Artemis Spyrou

A group of faculty and graduate students travelled to the Henry Ford Museum in Dearborn on January 14th to share a number of hands-on demonstrations that explain what we do at the Lab. Along with information about FRIB and the NSCL, visitors at the museum were able to test their acceleration skills, fragment a model nucleus, and observe radiation with detectors. All of the 2500 visitors to the museum that day passed by the enthusiastic volunteers at least once, and an estimated 900 visitors stopped by to try out the demonstrations and ask questions. Many of them left with "I made isotope ___" stickers from their successful exercise in making rare isotopes. These stickers were seen all over the museum. There were even a few Nobel Prize stickers awarded for the discovery of new isotopes!



On January 28th, a group of students, postdocs and faculty participated in the PBS Kids day at WKAR studios. With the nuclear smashing demo they invited participants to learn how we do experiments at the Lab. Some of the event mascots decided to try the fragmentation demo as well, like an owl and of course Sparty. The event was well attended and the Lab demos have been a big hit each year. You can [view more photos of the events here](#).



CCF UPDATE

The cyclotrons began producing a krypton-78 primary beam last Friday afternoon. Over the next seven days, secondary beams of bromine-75, bromine-73, gallium-63, and selenium-71 were developed and sent to the ANL gas cell for development. The gallium and selenium beams were also sent to the Advanced Cryogenic gas cell. Basic A1900 functionality and gamma-ray isotope tagging were re-established. Fragment momentum distributions were measured to help with our modeling. On Friday morning, the beam was sent to the S1 vault in preparation for a beam dump experiment.

REA UPDATE

This week, ReA is phasing the LINAC with an argon-40 (14^+ charge) beam made from the EBIT. The remainder of the time will be spent in preparation for running the upcoming experimental program. The experiment number 17012 for K. Chipps et al will begin on February 5th, and will use the transfer hall, N4 vault, Gas Cell, and EBIT.

SEMINARS

- MONDAY, FEB 05 AT 10:30 AM
1300 Auditorium (FRIB Tower 3)
Samuel Lipschutz, NSCL
'The (P,N) Charge-Exchange Reaction in Inverse Kinematics as a Probe for Isovector Giant Resonances in Exotic Nuclei'
- TUESDAY, FEB 06 AT 11:00 AM
NSCL Lecture Hall 1200
Joaquin Drut, University of North Carolina
'Signal-to-Noise Issues in Non-Relativistic Quantum Matter: From Entanglement to Thermodynamics'
- WEDNESDAY, FEB 07 AT 10:00 AM
NSCL Lecture Hall 1200
Samuel J. Novario, NSCL
'Effective Beta-Decay Operators with Coupled Cluster Theory'
- WEDNESDAY, FEB 07 AT 4:10 PM
NSCL Lecture Hall 1200
Heiko Hergert, NSCL
'Frontiers in Nuclear Structure Theory'
- THURSDAY, FEB 08 AT 11:00 AM
NSCL Lecture Hall 1200
Augusto Macchiavelli, LBL
'Spectroscopic Factors in the Islands of Inversion *a la* Nilsson'
- THURSDAY, FEB 08 AT 3:00 PM
NSCL Lecture Hall 1200
Katharina Domnanich, Paul Scherrer Institute
'Studies Towards 43Sc, 44Sc and 47Sc - a Novel Matched Pair for Theragnostic Applications'

PEOPLE AT THE LAB

- Sierra Garrett joined the Lab as an Operations Accelerator Engineer.
- Adam Anthony joined the Lab as a Graduate Student.

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[THE ARCHIVE OF PREVIOUS GREENSHEETS IS AVAILABLE HERE](#)