

7th ANL/INT/JINA/MSU Annual FRIB workshop

August 8 - 12, 2011

Interfaces Between Nuclear Reactions and Structure

Ongoing and planned experiments with rare isotopes offer great promise to further our understanding of nuclei and their role in astrophysics, but theory is needed both for interpreting the data and for highlighting the needed experiments. This workshop will bring together experimenters and theorists to discuss the needs from each side and perhaps offer guidance for future research efforts. The talks in the workshop should provide material for consideration in the [INT Program](#) that will start the week of the workshop and continue until September 2nd.

The experiment-theory interface topics that will be covered are:

1. Single-particle transfer/knockout and spectroscopic factors
2. Two- and multi-nucleon transitions and correlations
3. Charge-exchange reactions
4. Evolution of shell structure
5. Coulex and collective excitations
6. Intermediate energy experiments and isospin

Organizers:

Alex Brown (chair)

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Program Coordinator:

Laura Lee

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Previous workshops:

6th ANL/MSU/JINA/INT annual FRIB Theory Workshop

Computational Forefront in Nuclear Theory: Preparing for FRIB
Argonne National Laboratory, March 23 - 26, 2010

Fifth ANL/INT/MSU/JINA annual FRIB Theory Workshop

Bulk Nuclear Properties
Michigan State University, November 19-22, 2008

Fourth Argonne/INT/MSU/JINA RIA Theory Workshop

Rare Isotopes and Fundamental Symmetries
Institute for Nuclear Theory, University of Washington, September 19 - 22, 2007

Third ANL/MSU/INT/JINA RIA Theory Workshop

Opportunities with Exotic Beams
Physics Division, Argonne National Laboratory, April 4 - 7, 2006

Second Argonne/MSU/JINA/INT RIA Workshop

Reaction Mechanisms for Rare Isotope Beams,
Michigan State University, March 9-12, 2005

First Argonne/MSU/JINA/INT RIA Workshop

The r-process: the astrophysical origin of the heavy elements and related Rare Isotope Accelerator Physics,
Institute for Nuclear Theory, University of Washington, January 8-10, 2004

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Interfaces Between Nuclear Reactions and Structure

Agenda

All talks will be held in room A114

Monday, August 8

9:45 am	Alex Brown	Introduction and Discussion Leader
10:00 am	Petr Navratil	"Ab initio Reaction Theory for Light Nuclei"
10:45 am	Filomena Nunes	"The TORUS Project"
11:30 am	Discussions	
12:00 pm	Break	
1:30 pm	Wilton Catford	"Transfer Reaction Exp"
2:15 pm	Alexandra Gade	"Knockout Reaction Exp"
3:00 pm	Break	
3:30 pm	Alan Wuosmaa	"Nucleon-Transfer Reactions with Exotic Light Nuclei"
4:15 pm	Betty Tsang	"Transfer Reaction Exp"
5:00 pm	Discussions	

Interfaces between structure and reactions for rare isotopes and nuclear astrophysics

August 8 - September 2, 2011

Applications

If you are interested in this program, please fill out an [application form](#). Application and visit related correspondence should be directed to the program coordinator Laura Lee. Scientific correspondence should be directed to Alex Brown. Local support will be provided for accepted participants.

Overview

The goal of this program is to identify and understand the problems that need to be solved in the area of theory for reactions with rare isotopes that are required for planning experiments for FRIB (the Facility for Rare Isotopes) and understanding their results in terms of nuclear structure and applications to nuclear astrophysics. The program will:

- Bring together reaction and structure theorists who will work together to identify specific needs of reaction theory and propose paths for their solutions and implementation.

- Find ways to make the computational tools of reaction theory accessible to the community.

This 4-week program will consist of solicited lectures intermixed with presentations of new results, with ample time for collaboration and directed discussions.

The week of August 8th, our program will host the [ANL/INT/JINA/MSU annual FRIB workshop](#) during which others including experimentalists will be invited to present a week of concentrated talks and discussions.

Organizers:

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INT Program INT-11-2d

Interfaces between structure and reactions for rare isotopes and nuclear astrophysics

August 8 - September 2, 2011

workshop <http://www.int.washington.edu/PROGRAMS/11-48w/>
 program <http://www.int.washington.edu/PROGRAMS/11-2d/>

Mon Aug 8th			
9:45	Alex Brown	brown@nsl.msu.edu	Introduction and discussion leader
10:00	Petr Navratil	navratil@triumf.ca	Ab initio reaction theory for light nuclei
10:45	Filomena Nunes	nunes@nsl.msu.edu	The TORUS project
11:30	discussions		
12:00	breaks		
1:30	Wilton Catford	W.Catford@surrey.ac.uk	Transfer Reaction Exp
2:15	Alexandra Gade	gade@nsl.msu.edu	Knockout Reaction Exp
3:00			
3:30	Alan Wuosmaa	alan.wuosmaa@wmich.edu	Nucleon-transfer reactions with exotic light nuclei
4:15	Betty Tsang	tsang@nsl.msu.edu	Transfer Reaction Exp

	Aug 8-12 (workshop)	Aug 15-19	Aug 22-26	Aug 29 Sep 2		
Alex Brown	program	program	program		brown@nscl.msu.edu	
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Workshop and Program goals

Identify and understand the problems that need to be solved in the area of theory for reactions with rare isotopes that are required for planning experiments for FRIB (the Facility for Rare Isotopes) and understanding their results in terms of nuclear structure and applications to nuclear astrophysics (and weak interaction physics). The program will:

- 1) Bring together reaction and structure theorists who will work together to identify specific needs of reaction theory and propose paths for their solutions and implementation.
- 2) Find ways to to make the computational tools of reaction theory accessible to the community.

45 min talks to include questions and some discussions

Discussion leaders – to moderate, motivate and document –

- if discussion gets to technical then it should be continued in a small group or perhaps a special evening session.

Experimenters – what do you measure and what do you need from theory. What reaction models (codes) are needed now and in the near future.

Theorists – what can you do now, what is missing, and what can be done in the next 5-10 years.

Program goal (1) Make specific suggestions for what theory is needed.
- identify new opportunities.

Program goal (2) Make current codes more accessible and verifiable.
- possibly provide some “standard” simple models and parameter sets that can be used for “base” comparisons.