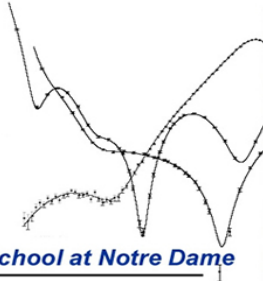


# Tools & Toys of Nuclear Astrophysics: JINA's Technical Schools



*R-Matrix School at Notre Dame*

The first school on the r-matrix @ ND (10/2004)

*Intensive in-depth technical training provided to graduate students, post-docs, and researchers.*

To address the need for graduate training in nuclear astrophysics and to reach a wide graduate audience, we have developed a 'school' model focused on particular topics of high relevance and importance to the field. These schools are based on a combination of lecture, student-faculty interaction, and skill development to provide special training in computational tools and techniques important for the field of experimental, theoretical, and observational nuclear astrophysics.

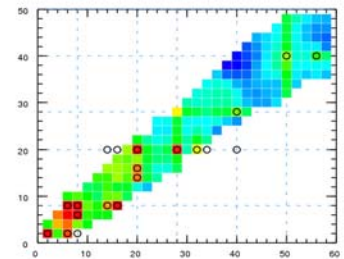
In the first school, approximately 35 participants spent two weeks at Notre Dame (10/2004) learning and applying R-Matrix theory – one of the essential tools for reliably interpreting low energy nuclear reaction and scattering data. The second school on network reaction techniques involved nearly 50 participants for two weeks also at Notre Dame (6/2005) to receive training in code development and application for nuclear reaction networks and nucleosynthesis simulations. The third school at MSU (2/2006) covered the basic theoretical methods and computational tools used for shell model calculations. After completion, the approximate 50 participants should be able to use modern shell model tools for analyzing experimental data and/or performing theoretical studies and explorations of nuclear structure properties.

These schools have reached 82 graduate students, 31 post-docs, and 20 researchers in the field (total, not adjusting for the same person attending more than one school). More schools are in the planning and we hope to publish the proceedings in serial.

This work was supported by the Joint Institute for Nuclear Astrophysics under NSF Grant PHY0216783.



The second school on network reaction techniques @ ND (6/2005)



The third school on the nuclear shell model @ MSU (2/2006)

## School Faculty:

### R-Matrix Theory:

E. Vogt (TRIUMF),  
R. N. Azuma (U. Toronto), and  
C. Brune (Ohio University)

### Reaction Networks:

B. Meyer (Clemson University)  
F. Timmes (LANL)

### Nuclear Shell Model:

A. Brown (MSU)  
M. Hjorth-Jensen (U. Oslo)