

LNGS SEMINAR SERIES

Richard James De Boer

University of Notre Dame

AZURE2: A general purpose R-matrix code

AZURE is a general purpose, multi-entrance channel, multi-level, R-matrix code for nuclear astrophysics developed by under the Joint Institute for Nuclear Astrophysics. It is optimized to analyze charged particle-particle and capture compound nucleus reactions. The code was one of the first open source R-matrix codes that has been made publically. While the code was quite successful, it was only a first step. Based on the original, the AZURE2 code has been developed with an improved graphical user interface and additional analysis and physics capabilities. The new code allows for multiple entrance and exit channel analysis, opening up a large amount of additional data that can aid in the analysis of reactions of astrophysical interest. By using C++, the code utilizes currently maintained libraries so that much of the general purpose mathematics is implemented using up to date and heavily tested routines. Additional kinds of data can also be analyzed, including beta delayed particle emission and total capture reactions (like those obtained by recoil separator measurements). In this talk I will give a general overview of the code and its capabilities and demonstrate its comprehensiveness by showing its application to several different cross section measurements performed at LUNA.

MAY 11, 2015 – 2:30 PM
LNGS - "B. PONTECORVO" ROOM