XV. International Conference on Nuclear Structure Properties

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Kırıkkale University, Science and Arts Faculty, Kırıkkale, TÜRKİYE

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INVITED SPEAKERS

Andrea VITTURI (National Institute for Nuclear Physics – INFN, Padova, Italy)
"The algebraic molecular model in ^{12}C and its application to the alpha + ^{12}C scattering: From densities and transition densities to optical potentials, nuclear form factors and cross sections"

Andrew BOSTON (Liverpool University, Liverpool, England)
"The AGATA spectrometer"

Dennis BONATSOS (Institute of Nuclear and Particle Physics, NCSR Demokritos, Greece)
"Islands of shape coexistence"

Francesco CAPPUZZELLO (Catania University, Catania, Italy)
"Heavy-ion induced direct reactions in view of the NUMEN project: a multichannel approach"

Hasan GUMUS (Ondokuz Mayıs University, Samsun, Türkiye)
"The concept of effective charge and electronic energy loss calculations for intermediate energy electrons and positrons"

Hatice DURAN YILDIZ (Institute of Technology Accelerator, Ankara University, Ankara, Türkiye)
"Beam dynamic studies at SRF accelerator system for free-electron laser and ATLAS experiment ADCoS duties at CERN"

Jameel-Un NABI (Wah University, Punjab, Pakistan)
"Updated status of key nuclei for presupernova evolution"

José M. ARIAS (Sevilla University, Sevilla, Spain)
"Quantum simulation of the Agassi Model in trapped ions"

Muhsin N. HARAKEH (Groningen University, Groningen, Netherlands)
"Nuclear compression modes from stable to exotic nuclei"

Sabin STOICA (International Centre for Advanced Training and Research in Physics (CIFRA), Romania, Bucharest, Romania)
"Challenges in the study of double-beta decay"

Sefa ERTURK (Niğde Ömer Halisdemir University, Niğde, Türkiye)
"Recent developments in SPECT and PET medical imaging systems"

Serdar UNLU (Burdur Mehmet Akif Ersoy University, Burdur, Türkiye)
"Allowed and forbidden contributions to two-neutrino double beta decay process"

Takehiko R. SAITO (High Energy Nuclear Physics Laboratory, RIKEN, Saitama, Japan)
"Solving puzzles of light hypernuclei by using heavy-ion beams, nuclear emulsions, and machine learning"

Valentin Olegovich NESTERENKO (Joint Institute for Nuclear Research, Dubna, Russia)
"Low-energy M1 states in deformed nuclei: spin scissors or spin-flip?"

Yu ZHANG (Liaoning Normal University, Dalian, China)
"Effects of single-particle on shape phase transitions in odd-even systems"

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TOPICS

Nuclear Structure
Nuclear Reactions
Nuclear Astrophysics
Nuclear Models
Nuclear Scattering
Nuclear Energy
Nuclear Reactors
Accelerator Physics
Nuclear Analytical Methods
Medical and Health Physics
High Energy and Particle Physics
Nuclear Application in Life Science
Radiation Measurements and Dosimeters
Other Related Topics

Estimations of (n,α) Reaction Cross-Sections Using Bayesian Classifier

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Abstract:

Systematical investigation of the (n,α) reaction cross sections is profitable for both thermal power applications and the comprehension of fundamental atomic physical science issues. From one point of view, it is essential to estimate helium creation, nuclear heating, and transmutation fission and fusion reactor structural materials; and then, is valuable to explain the mechanism of nuclear reaction. Likewise, it is important for calculating the neutron cross-sections of the nuclides for experimental data accessibility. In the literature, a certain systematic dependence on the asymmetry parameter of at 14.5 MeV neutron energy is observed. Also, the literature proposes empirical formulas to describe the systematic regularity, which is referred to as the isotopic effect. The systematic study of the (n,α) reaction cross-section at 14.5 MeV is presented in this research. It has been assessed by utilizing the Bayes classification algorithm when compared to more advanced algorithms, Naive Bayes classifiers can be exceedingly fast. The calculations have been completed with the Bayes classifier and experimental information taken from Experimental Nuclear Reaction Data (EXFOR). The systematical study for (n,α) reactions cross-sections compared TALYS 1.95 calculations

Keywords: Cross sections, (n, α) reaction, Bayesian classifier, TALYS 1.95.