PAVIA

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QUASIELASTIC ELECTRON AND NEUTRINO-NUCLEUS SCATTERING

- consistent models developed for different exclusive, semiinclusive and inclusive process
- non relativistic and relativistic models
- comparison of different models
- comparison of the models with experimental data

QUASIELASTIC ELECTRON AND NEUTRINO-NUCLEUS SCATTERING

- electron scattering: electron is a probe to investigate nuclear properties
- neutrino experiments aimed to determine neutrino properties
- nuclei used as neutrino detectors
- nuclear effects must be well under control
- models developed for electron scattering and tested in comparison with electron scattering data have been applied to neutrino scattering

COMPARISON OF DIFFERENT MODELS

collaboration with J.A. Caballero (Sevilla) J.M. Udias (Madrid) M.B. Barbaro (Torino)

RELATIVISTIC MODELS

COMPARISON OF DIFFERENT RELATIVISTIC MODELS

- (e,e')
- A. Meucci, J.A. Caballero, C. Giusti, F.D. Pacati, J.M. Udias PRC (2009) 80 024605 CCQE
- A. Meucci, J.A Caballero, C. Giusti, J.M. Udias PRC (2011) 83 064614 comparison with MiniBooNE data
- A. Meucci, M.B. Barbaro, J.A. Caballero, C. Giusti, J.M. Udias PRL (2011) 107 172503
- A. Meucci, C. Giusti, F.D. Pacati PRD (2011) 84 113003

Andrea Meucci's talk

EXOTIC NUCLEI

collaboration with G. Co' (Lecce)

- V. De Donno (Lecce)
 - P. Finelli (Bologna)
- M. Grasso (Orsay)
- M. Anguiano (Granada)
- A. Lallena (Granada)

Quasifree (e,e'p) Reactions on Nuclei with Neutron Excess

Carlotta Giusti Andrea Meucci Franco Pacati Giampaolo Co' Viviana De Donno

PRC 84 024615 (2011)

- \cdot understanding the evolution of nuclear properties as a function of N/Z
- nuclear reactions main source of information on nuclear properties
- direct reactions give insight into the s.p. properties
- advantages of the elm probe: (e,e'p) preferential tool to study proton-hole states, bound protons, validity and limits of IPSM
- large amount of (e,e'p) data, accurate information on s.p. properties of stable nuclei
- advent of RIB facilities will provide data on unstable nuclei
- electron RIB colliders that use storage rings under construction (GSI, RIKEN) will offer unprecedented opportunities to study exotic nuclei with electron scattering (ELISe at FAIR, SCRIT at RIKEN)
- exclusive (e,e'p) knockout experiments (ELISe at FAIR, SCRIT at RIKEN)

OUTLINE

- DWIA model for (e,e'p)
- NIKHEF data ⁴⁰Ca ⁴⁸Ca
- original analysis DWIA
- comparison of different models DWIA, RDWIA, different s.p. wave functions
- calculations performed for Ca isotopes: 40, 48, 52, 60
- evolution of nuclear properties with models of proven reliability in stable isotopes will test the ability of the established nuclear theory in the domain of exotic nuclei

Mean Field Calculations of Exotic Nuclei Ground States

G. Coʻ, V. De Donno P. Finelli M. Grasso M. Anguiano, A.M. Lallena C. Giusti, A. Meucci, F.D. Pacati

Mean Field Calculations of Exotic Nuclei Ground States

Predictions of three mean field theoretical approaches (non relativistic HF with both zero and finite-range interactions, relativistic Hartree) in the description of the ground state properties of some spherical nuclei far from the stability line (O, Ca Ni, Sn isotopes). Binding energies, s.p. particle spectra, density distributions, charge and neutron radii