

Correlations between two-nucleon transfer reactions in the context of nuclear supersymmetry.

Ruslan Magana Vsevolodovna*

*Universidad Juarez Autónoma de Tabasco, División Académica de Ciencias Básicas,
Km 1 Carr. Cunduacán-Jalpa de Méndez. CP 86690, Tabasco, Mexico. and
Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, A.P. 70-543, 04510 México, D.F., México*

Roelof Bijker Bijker†

Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, A.P. 70-543, 04510 México, D.F., México
(Dated: March, 2012)

The nuclei belonging to a supersymmetric quartet are described by a single Hamiltonian, and hence the wave functions, transitions and transfer rates are strongly correlated. We present a generalization of the F-spin to connect different transfer reactions of one nucleon and two nucleons. Group theoretically, the generalized F-spin is defined by $U(18) \supset U(6) \otimes U(3)$ and therefore correlations can be derived in terms of isoescalar factors. The spectroscopic strenghts of two-nucleon transfer reactions consitute a stringent test for two-nucleons correlations in the nuclear wave functions. We have determined the spectroscopic strength of one neutron transfer ^{195}Au to ^{196}Au and a proton transfer ^{195}Au to ^{194}Pt . This allows determine the spectroscopic strength of two-nucleon ^{194}Pt to ^{196}Au and correlate it with the reaction ^{195}Pt to ^{195}Au . This is theoretical evidence of the relation of a phenomenon of weak character as a beta decay with a reaction of strong character as a transfer of two particles in the context of nuclear supersymmetry.

PACS numbers:

*Electronic address: ruslan.magana@nucleares.unam.mx

†Electronic address: bijker@nucleares.unam.mx