Eurasian Journal of Physics and Functional Materials

2020, *(*), **-**

Some questions related to the transformation of Jacobi coordinate sets of the three body wave function built on the Gaussian basis

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DOI: **10.29317/********** entered by Editors**
Received: **.**.**** - after revision

The three-body wave function built on the basis of the Gaussian function, calculated using the three-body Hamiltonian with the Pauli blocking operator is studied. Analytical expressions are presented for the matrix elements of the overlap of the basis functions for both basic and alternative set of relative Jacobi coordinates. The correlation densities of the wave function are calculated and illustrated depending on the set of orbital numbers also for the main and for the alternative Jacobi coordinates.

Keywords: three-body problem, Gaussian basis, relative Jacobi coordinates

Introduction

Your text comes here...

Section title

Example of a table style

The energy dependence of total cross sections of reactions ^{6}He + Si and ^{6,9}Li + Si in the beam energy range 5-30 MeV/nucleon has been measured. An agreement with the published experimental data for the reaction ^{6}He + Si was obtained. For the reaction ^{9}Li + Si new data in the vicinity a local enhancement of the total cross section was obtained. Theoretical analysis of possible reasons of appearance of this peculiarity in the collisions of nuclei ^{6}He and ^{9}Li with Si nuclei has been carried out including the influence of external neutrons of weakly bound projectile nuclei.

Table 1.
Please write your table caption here (*the width of the table should be equal to the width of the text*)

H	q	α_q	$\chi^2/d.o.f.$	Confidence level of fittings
0.3	2	0.56 ± 0 .01	0.38	98.90 %
	3	1.22 ± 0 .03	0.49	95.93 %
	4	1.92 ± 0 .06	0.58	91.30 %
	5	2.63 ± 0 .10	0.70	80.95 %
1	2	0.59 ± 0 .01	0.74	76.62 %

Example of text style and formula design in the text

In our experiments, we employed the Dubna gas-filled recoil separator (DGRFS), that allows the separation of the products of complete fusion reactions from the beam of bombarding ions, elastically-scattered nuclei, and products of incomplete fusion. The detection system includes proportional chambers used to measure the time of flight (TOF) of particles and several semiconductor detectors with position-sensitive strips.

The principle of operation of the separator is selection of products of the complete-fusion reaction by their charge state q in a rare gas and kinematic characteristics (mass of recoil nucleus m and its velocity v) in accordance with the separator magnetic rigidity $B\rho = mv/q$ (note, q depends linearly on v). These values are calculated for the xn-reaction channel when setting the separator's parameters.

The DGFRS strongly separates forward-peaked evaporation residues (ER), products of complete-fusion reactions, within a narrow angle with a huge suppression of the products of the transfer reactions and even incomplete fusion, e.g., αxn reactions. The TOF selection in the existing separators may be complemented and reinforced by the combined measurement of recoil energy and TOF. Note, the production properties "separator", "mass separation", "angular selection", and "TOF selection" were called "assignment properties" in [3].

Subsection title

Formulas should be written follow type:

$$TC(HKL) = \frac{I(hkl)}{I_0(hkl)} \Big/ \frac{1}{n} \sum \frac{I(hkl)}{I_0(hkl)}, \tag{1}$$

Example of figure style

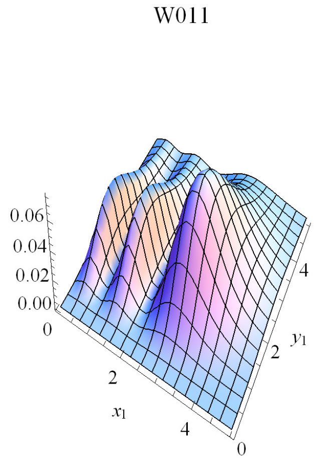

Figure 1. Please write your figure caption here.

The first superheavy nucleus ^{289}Fl was discovered in the ^{244}Pu(^{48}Ca, $3n$) reaction studied at DGFRS (here and after we refer to reviews [1,2] containing references to most of earlier experimental data). The decay properties of ^{289}Fl and descendant nuclei are shown in figure 1.

Authors contributions

All the authors were involved in the preparation of the manuscript. All the authors have read and approved the final manuscript.

Conclusion

Your Conclusion text comes here...

Acknowledgments

Its purpose is to thank all of the people who helped with the research but did not qualify for authorship (check the target journal's Instructions for Authors for authorship guidelines). Acknowledge anyone who provided intellectual assistance, technical help (including with writing and editing), or special equipment or materials.

Also, use this section to provide information about funding by including specific grant numbers and titles. If you need to include funding information, list the name(s) of the funding organization(s) in full, and identify which authors received funding for what.

References

For books: Author, *Book title* (Publisher, place year) page numbers.(DOI or ISBN) Example:

[1] Bass R, Nuclear Reactions with Heavy IonsBerlin (Heidelberg, New York: Springer-Verlag, 1980) 410 p.(DOI or ISBN)

For articles from journals: Author, Journal **Volume** (year) page numbers.(DOI) Example:

[2] Tanihata I. et al., Phys.Lett.B. **206** (1988) 592-600.(DOI)

For conference materials, proceedings, etc.: Author, Publication title: Type of publication **Volume** (year) page numbers.(DOI) Example:

[3] Oganessian Y.Ts., Proceeding of the International Conference on Nuclear Physics, Munich **73** (1975) 351-360.(DOI)

Example:

[1] Bass R, Nuclear Reactions with Heavy IonsBerlin (Heidelberg, New York: Springer-Verlag, 1980) 410 p.(DOI or ISBN)
[2] Tanihata I. et al., Phys.Lett.B. **206** (1988) 592-600.(DOI)
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