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SHELS - Separator for Heavy Element Spectroscopy. First results.

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Abstract content
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Within the past 15 years, the recoil separator VASSILISSA has been used for the investigations of evaporation residues (ERs) produced in heavy ion induced complete fusion reactions. In the course of the experimental work a bulk of data on ERs formation cross sections, synthesized in asymmetric reactions was collected.

With γ and β detector arrays, installed at the focal plane of the VASSILISSA separator, detailed spectroscopy of Fm - Lr isotopes was performed during last 5 years.

Accumulated experience allowed us to perform ion optical calculations and to design the new experimental set up, which will collect the base and best parameters of the existing separators and complex detector systems used at the focal planes of these installations.

New experimental set up (SHELS, the velocity filter) on the basis of existing VASSILISSA separator was developed for synthesis and studies of the decay properties of heavy nuclei. In May - July 2013 first test experiments were performed. At the focal plane of the separator GABRIELA set up was installed. Beam of ^{22}Ne from U400 cyclotron and Au, ^{198}Pt , $^{206,208}\text{Pb}$ and ^{238}U targets were used in test experiments. For evaporation residues from reactions with Au and ^{198}Pt targets transmission efficiency about 5 % was obtained.

In November 2013 test experiments with accelerated ^{50}Ti were performed. With ^{164}Dy and ^{208}Pb targets transmission efficiency for evaporation residues and suppression factors for scattered Ti beam were studied.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD)?

MSc

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

YES

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