

# LXXII International conference "Nucleus-2022: Fundamental problems and applications"

Contribution ID: 56

Type: Oral talk (15 min + 5 min questions)

## First experiment at the Super Heavy Element Factory. New data in the $^{243}\text{Am} + ^{48}\text{Ca}$ reaction.

*Tuesday, 12 July 2022 10:00 (20 minutes)*

We present results of the first experiments aimed at the synthesis of Mc isotopes in the  $^{243}\text{Am} + ^{48}\text{Ca}$  reaction performed at the new gas-filled separator DGFRS-2 on-line to the new cyclotron DC280 at the SHE Factory at JINR. One hundred-ten new decay chains of  $^{288}\text{Mc}$ , four new decay chains of  $^{287}\text{Mc}$  and ten chains assigned to  $^{289}\text{Mc}$  were detected. The  $\alpha$ -decay of  $^{268}\text{Db}$  with an energy of 7.6-8.0 MeV, half-life of  $16(+6 -4)$  h, and a branch of  $55(+20 -15)$  was registered for the first time, and a new spontaneously fissioning isotope  $^{264}\text{Lr}$  with a half-life of  $4.9(+2.1 -1.3)$  h was identified. Decay chain of the new superheavy isotope  $^{286}\text{Mc}$  has been registered. We firstly observed spontaneous fission of  $^{279}\text{Rg}$ . The cross section for the  $^{243}\text{Am}(^{48}\text{Ca},3n)^{288}\text{Mc}$  reaction was measured to be  $17.1(+6.3 -4.7)$  pb, which is the largest value for a superheavy nucleus at the Island of Stability. The cross section of  $^{243}\text{Am}(^{48}\text{Ca},5n)^{286}\text{Mc}$  was measured for first time.

### The speaker is a student or young scientist

No

### Section

1. Nuclear structure: theory and experiment

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**Session Classification:** Nuclear structure: theory and experiment