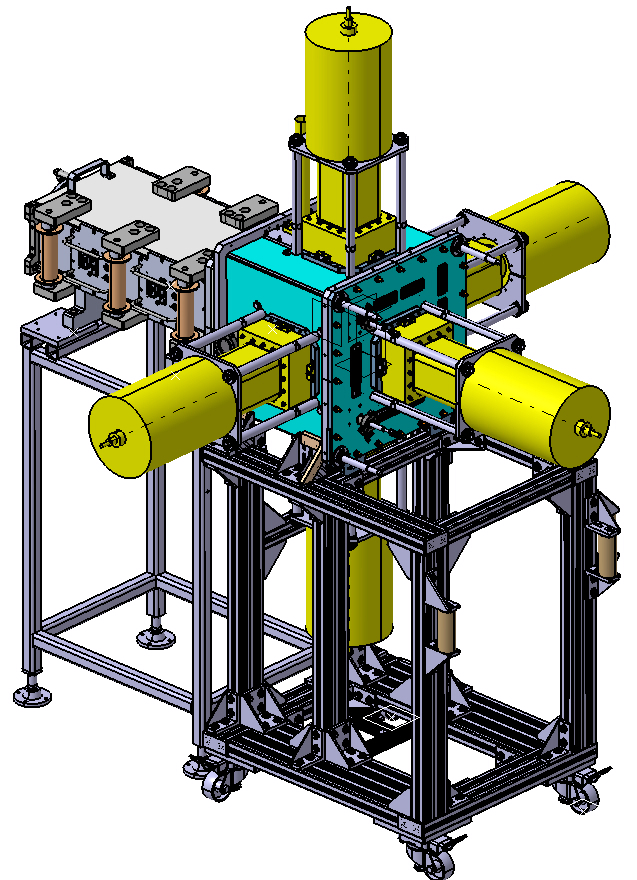
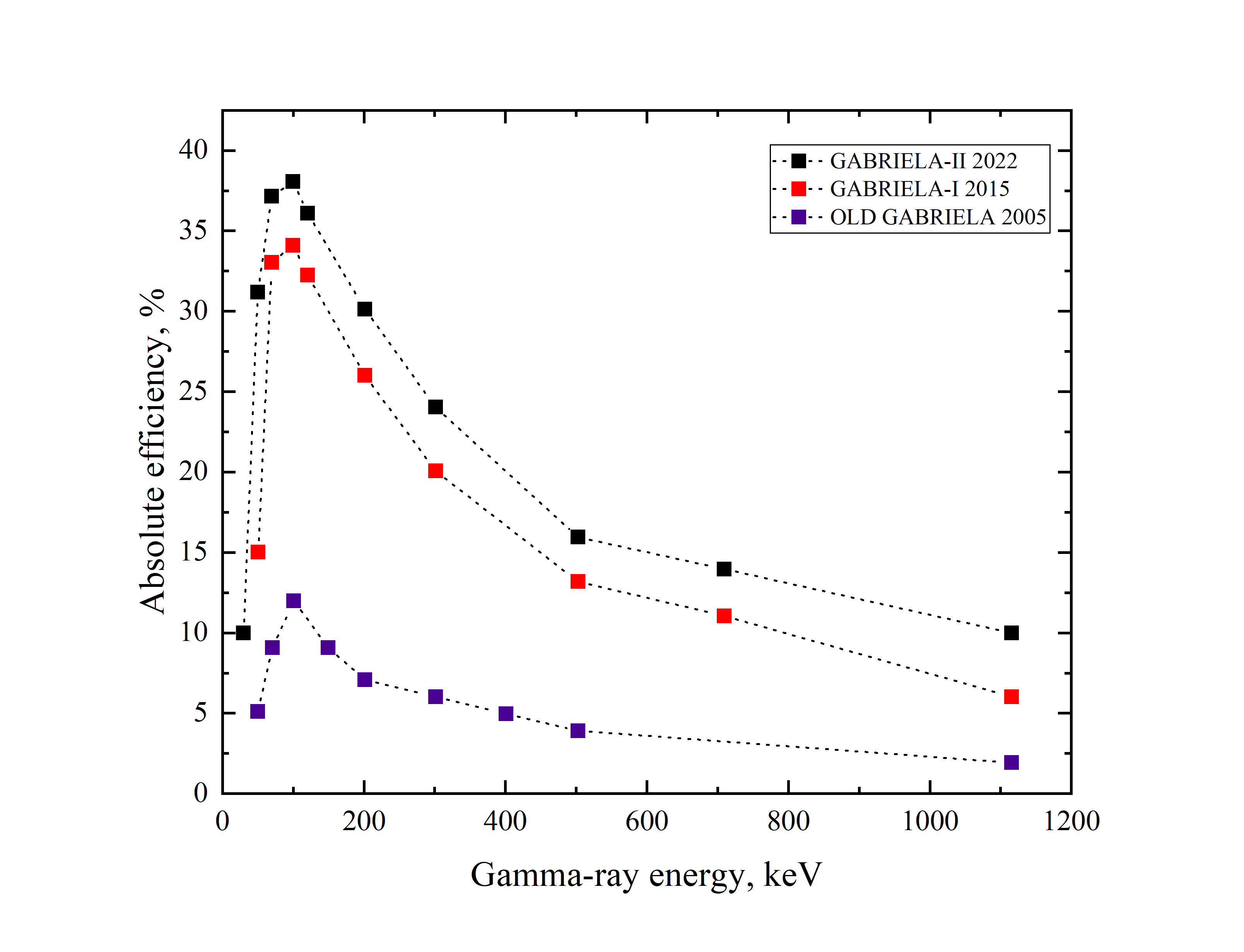
**Spectroscopy experiments on GABRIELA.**

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GABRIELA [1] is a detection system installed at the focal plane of the SHELS [2-3] recoil separator for α-, β- and γ-spectroscopy of heavy and superheavy nuclei.

In recent years experiments have been devoted to complete fusion reactions, like as 48Ca+204-208Pb [4] and 50Ti+204Pb [5], the cross sections of those reactions have the order of nanobarns. For the first time isotope of 249No was synthesized in the reaction 204Pb(48Ca,3n)249No, it has half-life 38.3±2.8 ms[6]. GABRIELA has recently been upgraded, named of GABRIELA-II (see Fig. 1. left). Instead 4 single crystals Ge-detectors were installed 5 Clover-detectors, the lets to fix gamma-quanta with best efficiency (see Fig. 1. right).



*Fig. 1. Left. GABRIELA-II; Right.Absolute efficiency registration of gamma-quanta by detector in different variation of GABRIELA.*

The first test experiment 206Pb(48Ca,2n) 252No will be carried out with GABRIELA-II setup soon.

1. K. Hauschild et al., Nucl. Instrum. Methods A 560, 388 (2006)

2. A.G. Popeko et al., Nucl. Instr. and Meth. B 376, 140 (2016)  
3. A.V. Yeremin et al., PEPAN Lett. 12, 43 (2015)

4. A.A. Kuznetsova et.al., Bulletin of the Russian Academy of Sciences: Physics, Vol. 84, No. 8, pp. 932–937 (2020)

5. A. Lopez-Martens et al., Phys. Rev. C 105, L021306 (2022)

6. M. S. Tezekbayeva et al. Eur. Phys. J. A 58:52 (2022)