New insight into the $^{48}$Ca region from CLARA-PRISMA spectrometer

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Thick target gamma coincidence experiments exploiting deep-inelastic reactions provided extensive results on neutron-rich nuclei in the doubly-magic $^{48}$Ca region. The subsequent experiment performed for the $^{48}$Ca+$^{238}$U colliding system with the PRISMA-CLARA spectrometer opened new perspectives for this spectroscopic study. The obtained results for the earlier known $^{49}$Ca and $^{50}$Ca nuclei will be discussed to display the power of the spectrometer for spectroscopic investigation. The new structures identified in $^{48}$K and $^{49}$K and extended from thick target experiments data will be presented to demonstrate perspectives for studying very neutron-rich nuclei.