

CADMIUM ISOTOPE PHOTODESINTIGATION

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Yields of different multiplicity photonuclear reactions on were measured by method of induced activity for three different cadmium targets - cadmium natural isotopic mixture, ¹¹⁶Cd and ¹¹²Cd isotopes. As a source of high energy X-rays we used bremsstrahlung radiation with end point energy 55 MeV.

Experiment was conducted on race-track microtron RM-55 accelerator [1]. The yields of photonuclear reactions for several channels of excited states of cadmium isotopes in the energy range up to 55 MeV were measured for the first time.

First time obtained decay channels ¹¹²Cd(γ ,n)^{111m}Cd, ¹¹²Cd(γ ,p)¹¹¹Ag, ¹¹²Cd(γ ,pn)^{110m}Ag.

Comparison of experimental data and theoretical calculations by combined model of photonuclear reactions [1] and TALYS program [2] demonstrates rather good description of experimental results for photoneutron reactions for heavy cadmium isotopes. For channels with proton emission only model [1] is in according with experimental data. Model [2] doesn't take in account specific features of $T_{>}$ isospin component decay of Giant Dipole Resonance, and underestimate proton emission channel.

For light isotope ¹⁰⁶Cd theoretical calculations are in contradiction with experimental data. Probably this can be explained by specific features of shell structure of ¹⁰⁶Cd, which is situated near the β -stability boundary.

For isotopes ¹¹⁵Cd and ¹⁰⁴Ag isomeric ratios were calculated. Theoretical calculations [2] are in reasonably good agreement with experimental data.

1. A.I.Karev *et al.* // XXII Russian Particle Accelerator Conference RuPAC-2010, Protvino, Russia, RuPAC-2010, Contributions to the Proceedings. P.316.
2. B.S.Ishkhanov, V.N.Orlin // Phys. Atom. Nucl. 2011. V.74. P.19.
3. A.J.Koning S.Hilaive, M.C.Duijvestijn // Proceedings of the International Conference on Nuclear data for Science and Technology, April 22–27, 2007 / Ed. O.Bersillon, F.Crunsing, E.Bango, *et al.* Nice: EDP Sciences, 2008. P.211.