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Studying collective excitations at CCB of IFJ PAN Krakow

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The Cyclotron Centre Bronowice (CCB) of the Institute of Nuclear Physics of the Polish Academy of Sciences (IFJ PAN) in Kraków is a proton therapy center built in the previous decade, where in addition to therapy, the proton beam is used for scientific research. One of the first measurements performed at the Cyclotron Centre Bronowice (CCB) were studies of collective excitations induced using proton inelastic scattering reaction.

The employed experimental method was based on coincidence measurement of scattered protons and gamma rays emitted from the decay of excited nuclei. A series of experiments have been conducted using experimental setup consisting of the KRATTA [1] array to register scattered protons and HECTOR [2] or LaBr3 detectors together with PARIS [3] phoswiches for gamma rays measurement. As a result the gamma decay of excited ^{208}Pb , ^{120}Sn , ^{58}Ni and ^{62}Ni nuclei has been investigated. In the first experiment it was measured the gamma decay of Isoscalar Giant Quadrupole Resonance (ISGQR) from ^{208}Pb [4], which was the confirmation of the only previous observation [5]. Similar investigations have been performed also for ^{120}Sn . The gamma decay from Ni isotopes have been measured in order study the pygmy strength with increasing neutron number. In the talk the experimental method as well as selected results will be presented.

References

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