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Study of the γ decay of high-lying states in ^{208}Pb via inelastic scattering of ^{17}O ions

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Heavy ions inelastic scattering at approximately 20 MeV/u is a very useful tool to study highly excited states (up to the region of the Giant Quadrupole Resonance), when the measurement of the subsequent gamma decay is also performed with high resolution. Some partial results of the most recent experiments of this type, performed to investigate the electric-dipole (E1) response of nuclei at energies around the particle threshold, are reported. In particular high-lying states in ^{208}Pb nucleus were populated via inelastic scattering of a ^{17}O beam at bombarding energy of 20 MeV/u. Their subsequent gamma decay was measured with the detector system AGATA Demonstrator based on HPGe detectors, coupled to an array of large volume LaBr3:Ce scintillators. Preliminary results in comparison with (γ,γ') data, for states in the 5-8 MeV energy interval, seem to indicate that in that region the states belong to two different groups, one with a isoscalar character and the other with a isovector nature. This is similar to what was observed in other stable nuclei with (α,α'γ) experiments. The multipolarity of the observed gamma transitions is determined with remarkable sensitivity by almost continuous angular distribution measurements with AGATA. Data aiming at studying the neutron decay of the Giant Quadrupole Resonance in ^{208}Pb by high resolution measurement of the following gamma decay are also presented in their preliminary form. Similar analysis on ^{90}Zr, ^{124}Sn and ^{140}Ce is currently in progress.