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**GAMMA RAY BEAM TRANSMUTATION****K. Imasaki, and D. Li ,**

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**ABSTRACT**

We have proposed a new approach to nuclear transmutation by a gamma ray beam of Compton scattered laser photon. We obtained 20MeV gamma ray in this way to obtain transmutation rates with the giant resonance of <sup>197</sup>Au and <sup>129</sup>Iodine. The rate of the transmutation agreed with the theoretical calculation.

Experiments on energy spectrum of positron, electron and neutron from targets were performed for the energy balance and design of the system scheme. The reaction rate was about 1.5~4% for appropriate photon energies and neutron production rate was up to 4% in the measurements.

We had stored laser photon more than 5000 times in a small cavity which implied for a significant improvement of system efficiency. Using these technologies, we have designed an actual transmutation system for <sup>129</sup>Iodine which has a 16 million year's activity. In my presentation, I will address the properties of this scheme, experiments results and transmutation system for iodine transmutation.