

Report on GEMMA/ ν Gen project

1 Goal of the experiment

GEMMA project aims to study Magnetic Moment of Neutrino and coherent neutrino-nuclei scattering. GEMMA I obtained already the limit and GEMMA III should improve this limit by a factor 5. This project profits of the unique conditions provided by Kalinin Nuclear power plant

Recently the COHERENT experiment claimed to have observed the coherent scattering of neutrino on nucleus and this results must be confirmed, it a goal for ν Gen experiment

2, Contributions of the JINR Group

The JINR team cover all the part of the experiment. It develop low threshold Ge detector with Canberra company. The team also performs the simulations and analysis. It is clearly a home-made experiment competitive at the global level.

3 Plan

The detector is under commissioning and should be soon in operation.

A development is in progress to develop detector with lower threshold with higher mass of germanium crystal.

4 Publications

1 publication on the ν Gen experiment in the last 3 years. This can be understand in a period of commissioning but it could be better taking into account the size of the team and the development done or in progress.

5 PhD theses

2 PhD should defend their thesis in 2019

6 Talks

1 plenary talks and 5 parallel session in the last three years.

7 Group size, composition and budget

16 staff members. A total of 7.2 FTE with 4.7 for physicists and 2.5 for engineers. It seems well calibrated for the size of the experiment and the development in progress. The budget should allow to reach the expected goal

Comments

GEMMA/ ν Gen project lead entirely by JINR team is very relevant in the context of the opportunities offered by the Kalinin Nuclear Power Plant and the expertise of the JINR in Ge detectors and neutrino physics. The JINR team has also a strong expertise in low background technique which is essential for such experiment. This is demonstrated by the GEMMA I results in MMM search.

There is a strong competition in the field of the search of coherent neutrino-nucleus scattering; The proposed development to improve the sensitivity of the detector is coherent with the objective. JINR has a role to play if the timescale is respected.

The team should be encouraged to publish more.