1) Title: Polarisation capabilities of AGATA (1 day AGATA, 5 Dec 2010)

spokeperson: P.G.Bizzeti

2) Main objectives:

Test of the ability of AGATA (and of the data sorting procedures) to measure the linear polarisation of gamma rays. In case of success, AGATA modules could be used to test the entanglement of the two

511 keV gamma rays from singlet positronium.

3) Short statement on the run itself and how AGATA operated:

Measurement of gamma rays resulting from the Coulomb Excitation of 104Pd and 108Pd with a beam of 12C at 32 MeV. Measurement of unpolarised gamma rays from a 137Cs source, for comparison.

4) Status of the analysis:

Preliminary analysis completed. Advanced methods of analysis are being studied.

5) Any results:

The expected dependence of the Compton cross section on the azimuthal angle, as a signal of the linear polarisation of the primary photon, is clearly apparent.

6) Publications or talks:

Preliminary results have been presented by B.Melon at the EGAN2011

Workshop held in Padova in June 2011

(<http://agenda.infn.it/conferenceDisplay.py?confId=3224>).

7) Any problems.

Excessive clusterization of hits in specific segment positions, which is a known problem of the present PSA algorithms, produces spurious structures produces spurious structures in the azimuthal distribution. These artifacts disappear in the ratio of COULEX data to those from a 137Cs source. We plan to avoid this problem with a revised procedure.

8) Anything else