Contribution ID: **46** Type: **Oral**

Utilising Modern Metrology Techniques to Improve Efficiency for the AGATA Experimental installation.

AGATA (Advanced Gamma Tracking Array) is a European research project with the aim of developing and building a 4Pi gamma-ray spectrometer in order to further the study into nuclear structures. Historically, the alignment of AGATA and its predecessors had been conducted with contemporary equipment using more established methods. During the recent installation at INFN-LNL in Italy, a new approach was developed to reduce the time required to align each of the 30 detectors by ˜50% and to provide a fast and accurate way of checking that the detectors are still in their designed location without requiring the removal of the surrounding detectors. This latest approach was developed not only to improve efficiency, but also to achieve tighter tolerances than what had been achieved on previous installations. The use of laser trackers, metrology arms, dedicated tooling and their implementation will be discussed. The results from the current installation will be presented and analysed to show if the benefits were realised. In addition, a look at future improvements to this process for the installation of the subsequent detectors will be presented, this will include the option of individually scanning each detector and building a master model to improve the overall achievable tolerances and further increase installation efficiency.

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Session Classification: Session 3 - Metrology I

Track Classification: Metrology