Contribution ID: **53**                                                                                   Type: **not specified**

# Borexino calibration system

*Thursday 23 August 2012 16:10 (15 minutes)*

The specific egg-shape geometry of Hyper-Kamiokande poses firstly difficulties for the future calibration campaigns performed in the detector. In contrast to Super-K, the vertical walls would be curved which would limit access to certain regions of the active volume causing unnecessary reduction in the number of calibration locations. As a result, there is a strong urge to develop new, 3-dimensional tools that would help to improve the performance and the results of the calibrations. VirginiaTech, with Dr. Camillo Mariani and Szymon Manecki, would like to join efforts in the development and construction of such hardware. VirginiaTech has previously been responsible for the construction and leadership over a very successful series of calibration campaigns of the Borexino detector. In 4 calibrations, some 295 positions were covered in 35 days of DAQ time. Various radioactive and laser sources were used, most of which were developed and constructed at VT. One of the most effective tools used was the source location system based on 7 consumer-grade digital cameras that turned out to be precise to within 0.6\,cm throughout the volume of the detector. At the same time, in its ultra-pure environment, the cleanliness of the system was of major concern. But also in this case, no long-term contamination has been identified. The team at VirginiaTech has proven in multiple categories its proficiency and expertise in the field, and would like to now demonstrate the same level of capability as a Hyper-Kamiokande collaborator.

**Primary author:**   Dr MANECKI, Szymon (VirginiaTech)

**Presenter:**   Dr MANECKI, Szymon (VirginiaTech)

**Session Classification:**   Calibration System