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NAPP Photon Beam Entrance Alignment

The ALBA synchrotron light facility is a 3GeV storage ring able to work in top up mode which delivers X-Ray beams to seven beamlines, already in operation. One of the seven operating ALBA beamlines is CIRCE (BL24). A soft X-ray beam line that counts with two different end stations, Photoemission Electron Microscopy (PEEM) and Near Ambient Pressure Photoelectron spectroscopy (NAPP). Due to the beam line conditions, the NAPP end station needs special alignment in order to allow beam get until the sample. The NAPP end station can operate at a sample pressure range from UHV up to 25 mbar thanks to a differential pumping system which ensures a pressure difference of 10^9 between detector and sample. This is possible thanks to a differential pumping system with four very small apertures which have to been aligned within the $\pm 0.1\text{mm}$. The apertures alignment can be modified from the outside thanks to a micrometer system (with Vernier scale) for the vertical and horizontal movements.

Taking advantage of some features in the beamline, like the possibility to work with the order zero beam, a special mechanical set up is carried out to proceed with the first apertures alignment (within the $\pm 0.1\text{mm}$) and the component fiducialization. After that, the alignment process begins in the bamline by taking into account the order zero beam direction to reach the sample in the analyzer chamber. This poster presents the chosen fiducialization and alignment process combining optical and digital instruments.

Primary author: Ms LLONCH, Marta (ALBA - CELLS)

Co-authors: Mr REY, Fabien (ESS); Mr LADRERA, Jon (ALBA)

Presenter: Ms LLONCH, Marta (ALBA - CELLS)