Contribution ID : **20** Type : **Poster**

Recent Progress on the Toroidal ARPES Detector at the Australian Synchrotron

Monday, 2 December 2019 18:16 (1)

Angle Resolved Photoelectron Spectroscopy (ARPES) is the "complete" photoemission experiment. It simultaneously measures a photoelectron's kinetic energy, emission angle and sometimes spin, relative to the crystallographic axes, constructing a direct image of the electronic bandstructure. This makes ARPES the most powerful contemporary technique for determining the electronic structure of novel materials. ARPES has been instrumental in the discovery and understanding of new electronic phases of matter. For example, important aspects of the electronic structure of high-Tc superconductors, such as the pseudogap were discovered using ARPES, as was the experimental discovery of three dimensional topological insulators Bi1-xSbx and Bi2(Se,Te)3. Over the years, a dramatic improvement in the energy and momentum resolution possible with ARPES has occurred as a result of advances in photoelectron analysers and 2D detectors, allowing a range of new physics to be probed.

Despite the popularity of ARPES overseas, within Australia it has until now remained as a niche technique due to a small (albeit dedicated) user community. However, the continually growing local interest in studying novel materials with exotic electronic properties has led to the demand for our own synchrotron – based ARPES instrument. The ARPES detector, a toroidal geometry analyser, is now installed at the Soft X-ray beamline with commissioning completed and first experiments conducted. An overview of the latest developmens on the instrument is presented. A substantial upgrade to the system's capabilities has been compppleted via the recent installation of (i) an intense microwave-based, monochromated, helium discharge VUV source and (ii) a scanning tunnelling microscope (Fermi SPM, Scienta Omicron GmbH).

Speakers Gender

Male

Travel Funding

No

Level of Expertise

Experienced Researcher

Do yo wish to take part in the poster slam

No

Primary author(s) : TADICH, Anton

Co-author(s) : COWIE, Bruce (Australian Synchrotron); THOMSEN, Lars; EDMONDS, Mark (Monash University); Prof. RILEY, John (La Trobe University)

Presenter(s) : TADICH, Anton

Session Classification : Welcome Function