

# Spin-resolved ARPES at Pohang Light Source and the future of Korean ARPES activity based on synchrotron

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In this talk, we review the construction and the activity of the spin-resolved ARPES endstation in Pohang Light Source (PLS) and the future plan of the ARPES beamline in Korea's new synchrotron radiation source under construction. The spin-resolved ARPES endstation was planned in 2013 by the Center for Artificial Low Dimensional Electronic Systems of the Institute for Basic Science as an addition to the PLS's only one ARPES beamline (BL-4A) following the upgrade of PLS into PLS-II (3 GeV 250 mA top-up operation with 6 nmrad vertical emittance) in 2010. It involved the installation of an elliptically polarized undulator in 2015 and the construction of an ARPES facility based on a DA-30 Scienta analyzer in 2016. Since then, the system has been actively used by Korean ARPES groups. The attachment of a VLEED-type spin detector was progressed during 2018-2021 in collaboration with the HiSOR group. The characteristics of the system will be introduced with a few recent highlighted works such as the detection of photoelectrons from spontaneously formed excitations of an excitonic insulator [1, 2] and the *in-situ*-controlled quantum phase transitions of a 2D Mott insulator [3]. On the other hand, Korea started to build a 4<sup>th</sup> generation synchrotron radiation source (3 GeV 400 mA with 60 pmrad vertical emittance) at Ochang in 2022, which will host a nano-ARPES beamline as one of its first batch beamlines. This plan will be introduced briefly.

## References:

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