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High resolution spin- and angle-resolved photoelectron spectroscopy for 3D spin vectorial analysis[1] TAICHI OKUDA, KOJI MIYAMOTO, Hiroshima Synchrotron Radiation Center, Hiroshima University, AKIO KIMURA, Graduate School of Science, Hiroshima University, HIROFUMI NAMATAME, Hiroshima Synchrotron Radiation Center, Hiroshima University, MASAKI TANIGUCHI, Graduate School of Science, Hiroshima University and Hiroshima Synchrotron Radiation Center, Hiroshima University — Spin- and angle-resolved photoelectron spectroscopy (SARPES) is the excellent tool which can directly observe the band structure of crystals with separating spin-up and -down states. Recent findings of new class of materials possessing strong spin orbit interaction such as Rashba spin splitting systems or topological insulators stimulate to develop new SARPES apparatuses and many sophisticated techniques have been reported recently[1-3]. Here we report our newly developed a SARPES apparatus for spin vectorial analysis with high precision at Hiroshima Synchrotron Radiation Center. Highly efficient spin polarimeter utilizing very low energy electron diffraction (VLEED) makes high resolution ($\Delta E < 10$ meV, $\Delta\theta \sim \pm\, 0.2\,^{\circ}$) compatible with the SARPES measurement[4]. By placing two VLEED spin detectors orthogonally we have realized the polarization measurement of all spin components (x, y and z) with the high resolution. Some examples of the three-dimensional spin observation will be presented. [1] M. Hoesch et al., J. Electron Spectrosc. Relat. Phenom. 124, 263 (2002). [2] T. Okuda, et al., Rev. Sci. Instrum. 79, 123117 (2008). [3] S. Souma, et al., Rev. Sci. Instrum. 81, 095101 (2010). [4] T. Okuda, et al., Rev. Sci. Instrum. 82, 103302 (2011).

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