

Spin- and Angle-Resolved PhotoEmission Spectroscopy Laboratory: a Complete Experimental and Theoretical Analysis

Laurent Nicolai¹, Sunil Wilfred DSouza¹, Karol Hricovini², and Ján Minár¹

¹*New Technologies Research Centre, University of West Bohemia, Pilsen, Czech Republic*

²*Laboratoire de Physique des Matériaux et de Surfaces, Cergy-Pontoise University, Neuville,
France*

Corresponding email: lnicolai@ntc.zcu.cz

Abstract. Over the last decades, the photoemission phenomenon has been mastered as a powerful method to gain a direct insight into the electronic structure of materials, resulting in the currently well established SARPES technique. A full understanding of the measured electronic properties of a given material and all its associated origins also requires a theoretical analysis to complete the global picture. However, the experimental data cannot be straightforwardly compared to the fundamental state properties, which can be derived, for instance, by Density Functional Theory calculations. For this purpose, theory must include a genuine description of the photoemission process as covered by the one-step model of photoemission, enabling, for example, the effects of the SARPES geometry, the photon energy or the light polarisation. It is with the aim of fulfilling this challenging task that our brand new experimental SARPES laboratory at the NTC has opened, nicely complementing our already functioning theoretical department.