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Disentangling Rich Many-Body Physics with Modern Photoemission Techniques

Håkon Ivarssønn Røst

Department of Physics
Faculty of Natural Sciences
Norwegian University of Science and Technology

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Technical Seminar: 11:00 am - 12:00 pm
Location: Elings Hall 1601
Host: Professor Christopher Palmstrom

Abstract: Over the last decades, advances in instrumentation have allowed interactions between electrons and other degrees of freedom to be studied with unprecedented detail. For the experimental study of such many-body interactions, angle-resolved photoemission spectroscopy (ARPES) is the tool of choice as the complete, complex self-energy can be extracted from measured band structures. With the right analytical methodology, not only can specific interactions be observed, but furthermore disentangled and quantified. In this presentation, Håkon will introduce a few relevant analytical tools for the extraction and interpretation of complex self-energies from measured ARPES data. He will then demonstrate the use of these in practice from a few model systems and recent, soon-to-be-published work from their group. Finally, he will give a brief motivation on why it is helpful to study such phenomena using less conventional ARPES instrumentation, e.g. momentum microscopy.

Bio: Håkon I. Røst is a soon-to-graduate Ph.D. Candidate from the SFF Center of Quantum Spintronics (QuSpin) at the Norwegian University of Science and Technology (NTNU), under the supervision of Prof. Justin W. Wells. As a fresh graduate student, he was a visiting Fulbright Fellow at the Dept. of Electrical Engineering and Computer Science (EECS) at UC Berkeley. At Berkeley, his research involved the design of asynchronous finite state machines (AFSMs) for micro-electromechanical systems under the supervision of Prof. Kris S. J. Pister. At QuSpin his research includes -- but is not limited to, many-body interactions in low-dimensional systems, spin-polarized states on vicinal metal surfaces, and industrially compatible, low-temperature and high-quality graphene growth.

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