

Korrelationstage 2009

Scientific Report

The Korrelationstage are a series of bi-annual conferences on strongly correlated electron physics, the style and topics of which have continuously been adapted to novel developments in the field and to the group of participating physicists. From a meeting of a few theoretical physicists in the late 80's, the Korrelationstage developed into a five-day conference with about 150 participants, roughly 30% of them being experimentalists. The Korrelationstage 2009 started with the welcome reception Sunday evening, March 1st, and in total 65 talks were presented (including the colloquium talk on Monday) until Friday noon.

In order to stimulate focussed discussions in the style of the small meetings of the early 1990s while keeping the conference open for a wide range of topics and participants, we modified the conference setup: Two focus topics were identified for the 2009 meeting, "heterostructures" and "nonequilibrium dynamics of strongly correlated systems", two timely and rapidly developing fields, with strong mutual stimulation between theory and experiment. For each focus topic, we invited two keynote speakers, Jochen Mannhart, Univ. Augsburg, and George Sawatzky, Univ. British Columbia (heterostructures) as well as Andrea Cavalleri, Univ. Hamburg, and Andrew Millis, Columbia University (nonequilibrium dynamics). Andrea Cavalleri gave the MPI-PKS colloquium on Monday afternoon. Each of these special talks, to which we allotted twice the time (i.e., 40 minutes plus 10 minutes discussions), was excellent and, in fact, energized the Korrelationstage tremendously. We appreciate very much the support of the MPIPKS for this concept, in particular that the two speakers from the U.S. (Andrew Millis) and Canada (George Sawatzky) were funded. We consider the concept of keynote speakers introducing focus topics as extremely successful and recommend it strongly for future Korrelationstage.

One aim of the Korrelationstage is to give young scientists the opportunity to report on their work. About 20 talks were presented by first-time speakers, several of them advanced PhD students. They blended perfectly into the sessions with more experienced speakers without any reservation. The scientific level was high and the talks were mostly skillful.

The conference was open for all topics of strongly correlated systems, including sessions on low-dimensional systems, orbital phenomena, quantum phase transitions, high- T_c superconductivity, Kondo systems, metal-insulator transitions, magnetic order in Hubbard- and Heisenberg-type systems, theoretical methods for strongly correlated systems and condensates with ultracold atom gases. A special feature was the Thursday evening session on superconductivity in Fe pnictides, a novel field that had appeared in 2008. The session filled the lecture room despite the late hour.

Irrespective of the session, the scientific discussions were lively (this actually applied for all talks) and reflected the great interest and involvement of the participants in all topics which were presented. This was also valid for the poster sessions Monday and Tuesday evening. The conference Korrelationstage still represents a unique meeting for physicists working in the field of strongly correlated electrons, especially for the German community including international guests. It boosts the exchange of new ideas and is in particular a forum for young physicists who submitted applications in great numbers and contributed with very good or even excellent posters and talks.

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