研究员
研究员介绍

邹良剑简介

邹良剑 博士、研究员、博士生导师、物质计算科学研究室主任。

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邹良剑：中国科学院“百人计划”获得者,中国科学院固体物理研究所研究员、教授、博士生导师。1988年在四川大学物理系取得理学学士学位，1991和1998年在中国科学院固体所分别获得理学硕士学位和理学博士学位。其后多次访问香港中文大学物理系、意大利国际理论物理中心、美国伊利洛伊大学物理系（UIUC）、洛斯阿拉莫斯国家实验室（LANL）和麻省理工学院物理系（MIT），在意大利国际理论物理中心（ICTP）从事博士后研究。已经在Phys. Rev., J. Appl. Phys., J. Phys. CM等杂志发表论文五十余篇，为铁基超导专题书籍撰写一章。

主要研究成果：首次发现掺杂锰氧化合物中存在电子相分离的稳定基态，并证明电子形成轨道有序相和自旋密度波相更有利于电子分离相的稳定；提出巨磁电阻材料的复合极化子理论；证实电子关联对三角格子钴氧化合物费米面和基态性质的至关重要作用；阐明了轨道间跳跃、自旋关联和轨道关联与对多轨道关联电子体系的金属－绝缘体转变的重要影响；明确地证明稀磁半导体铁磁长程序来源于类双交换型的相互作用；发现纳米结构金属小颗粒体系中的自发磁化强度，磁化率和磁性杂质磁矩等磁学性质是费米面附近平均能级密度和费米能的普适函数；等等。

目前研究方向：(1) 强关联电子材料中轨道序和轨道相关物性、以及同步辐射光在固体材料中的应用； (2) 强关联电子体系的量子磁性、超导电性和量子相变； (3) 发展适合关联电子材料性质计算的新方法； (4)介观和纳米颗粒材料的磁性。

Liang-Jian ZOU : Oversea Talents Project of Chinese Academy of Sciences. Professor in Institute of Solid State

Physics, Chinese Academy of Sciences。He obtained the Bachelor degree of Science in Sichuan University in 1988, and the Master degree of Science and the PhD degree of Science in 1991 and 1998, respectively, in the Institute of Solid State Physics, the Chinese Academy of Sciences. As a visiting scholar, visiting scientist and professor, he visited the Department of Physics of Chinese University of Hong Kong, the International Centre for Theoretical Physics in Italy, the University of Illinois at Urbana and Champaign（UIUC）、Los Alamos National Laboratory（LANL）and the Masschusett Institute of Technology（MIT）for many times, and performed the postdoc research in the International Centre for Theoretical Physics（ICTP）。He has published more than 50 research papers in Phys. Rev. B, J. Appl. Phys., J. Phys. CM and other physical journals，and issued a chapter for a book on superconductor。

Major Achievements: he for the first time showed that the electronic phase separation is stable in the groundstate of doped manganites，and proved that the orbital ordered and spin-density-wave phase are more favorable of the stability of phase separated ground state；proposed a composite polaron theory for the colossal magnetoresistance in doped manganites；proved that the key role of electronic correlations in the Fermi surface topology and groundstate properties in triangular lattice NaxCoO2；demonstrated the important roles of the interorbital hopping, spin correlation on the multiorbital metal-insulator transitions in strongly correlated system；clearly showed that the ferromagnetic long range order in diluted semiconductors originates from a double exchange-like interaction；found that in nanosized metallic particles the spontaneous magnetization, magnetic susceptibility, and magnetic moment of impurity are the universal function of the ratio of the average level space near Fermi surface and the Fermi energy; etc.。

Major Research Interests: (1) Orbital order and orbital related properties in strongly correlated electron systems, and the application of synchrotron radiation in solids; (2) Unconventional superconductivity, quantum magnetism and quantum phase transitions; (3) Developing new calculation method for the properties of correlated electronic systems; (4) magnetism in nanostructure and mesoscopic materials。

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