

铁掺杂 $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ 中直接观测到非公度的反铁磁序

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在铜氧化物超导体中，由于电子的强关联特性，有许多与超导态共存或者与超导竞争的序。它们中反铁磁序是其中最主要的一个。往往在相图中超导出现的区域长程反铁磁已经被破坏了，但在高掺杂下会出现剩下的短程反铁磁涨落。它们在超导态中所扮演的角色仍然被高度的关注。这里我们利用自旋极化的扫描隧道显微镜，第一次直接观测到在掺杂进最佳掺杂的 $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ 的 Fe 原子附近的一个非公度反铁磁序。Fe 杂质压制了超导能隙结构中相干峰的强度，破坏了超导相干，但也将短程的非公度反铁磁序钉扎下来。我们的工作揭示了超导与反铁磁的密切关系，为理解高温超导与反铁磁的相互作用与高温超导配对提供了新的认识。

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