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Sommario/riassunto	This thesis contains three breakthrough results in condensed matter physics. Firstly, broken reflection symmetry in the hidden-order phase of the heavy-fermion material URu ₂ Si ₂ is observed for the first time. This represents a significant advance in the understanding of this enigmatic material which has long intrigued the condensed matter community due to its emergent long range order exhibited at low

temperatures (the so-called “hidden order”). Secondly and thirdly, a novel collective mode (the chiral spin wave) and a novel composite particle (the chiral exciton) are discovered in the three dimensional topological insulator Bi₂Se₃. This opens up new avenues of possibility for the use of topological insulators in photonic, optoelectronic, and spintronic devices. These discoveries are facilitated by using low-temperature polarized Raman spectroscopy as a tool for identifying optically excited collective modes in strongly correlated electron systems and three-dimensional topological insulators. .
