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Titolo	Phase Diagram and Magnetic Excitations of BaFe <sub>2</sub> -xNixAs <sub>2</sub> : A Neutron Scattering Study // by Xingye Lu
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2017
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Descrizione fisica	1 online resource (120 pages) : illustrations (some color), graphs
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	541.363
Soggetti	Superconductivity Superconductors Physical measurements Measurement Magnetism Magnetic materials Strongly Correlated Systems, Superconductivity Measurement Science and Instrumentation Magnetism, Magnetic Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Iron based superconductors -- Neutron scattering -- Phase diagram and incommensurate antiferromagnetic order of BaFe <sub>2</sub> -xNixAs <sub>2</sub> -- Origin of the incommensurate magnetic order in BaFe <sub>2</sub> -xNixAs <sub>2</sub> -- Nematic spin correlations in detwinned BaFe <sub>2</sub> -xNixAs <sub>2</sub> -- Magnetic excitations in overdoped BaFe <sub>2</sub> -xNixAs <sub>2</sub> -- Summary and outlook -- References -- Publications -- Resume -- Acknowledgements.
Sommario/riassunto	This book studies the structural, magnetic and electronic properties of, as well as magnetic excitations in, high-temperature BaFe <sub>2</sub> -xNixAs <sub>2</sub> superconductors using neutron diffraction and neutron spectroscopic methods. It describes the precise determination of the phase diagram of BaFe <sub>2</sub> -xNixAs <sub>2</sub> , which demonstrates strong magnetoelastic coupling and avoided quantum criticality driven by short-range incommensurate antiferromagnetic order, showing cluster spin glass behavior. It also

identifies strong nematic spin correlations in the tetragonal state of uniaxial strained  $\text{BaFe}_{2-x}\text{Ni}_x\text{As}_2$ . The nematic correlations have similar temperature and doping dependence as resistivity anisotropy in detwinned samples, which suggests that they are intimately connected. Lastly, it investigates doping evolution of magnetic excitations in overdoped  $\text{BaFe}_{2-x}\text{Ni}_x\text{As}_2$  and discusses the links with superconductivity. This book includes detailed neutron scattering results on  $\text{BaFe}_{2-x}\text{Ni}_x\text{As}_2$  and an introduction to neutron scattering techniques, making it a useful guide for readers pursuing related research.

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