**Spin fluctuations from Bogoliubov Fermi Surfaces in 18%-S substituted FeSe studied via NMR**
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Abstract text: S-substituted FeSe superconductors in the tetragonal phase display several unique features among iron-based superconductors, particularly the presence of zero-energy excitations in the superconducting (SC) state. The recent concept of Bogoliubov Fermi surfaces, a theoretical model describing ultranodal states in the SC state, has attracted considerable interest. Such anomalous phenomena can manifest under the condition of spin-orbit coupling, multi-band systems, and superconductivity with time-reversal symmetry breaking [1]. We conducted 77Se-NMR measurements on 18%-S substituted FeSe FeSe1-*x*S*x* (*x*=0.18), at low temperatures down to ~100 mK. We found an anomalous enhancement of low-energy spin fluctuations deep in the SC state [2]. Such unusual behavior is theoretically explained by the BFS model with strong Bogoliubov quasiparticle interactions between BFSs with C2 symmetry [3]. In the conference, we will also discuss pressure dependence of the anomalous spin fluctuations.

[1] Setty, C., Bhattacharyya, S., Cao, Y., Kreisel, A. & Hirshfeld, P. J. Topological ultranodal pair states in iron-based superconductors. *Nat. Commun.* **11**, 523 (2020).

[2] Z. Yu, K. Nakamura, K. Inomata, X. Shen, T. Mikuri, K. Matsuura, Y. Mizukami, S.Kasahara, Y.Matsuda, T. Shibauchi, Y. Uwatoko, and N. Fujiwara, Spin fluctuations from Bogoliubov Fermi surfaces in the superconducting state of S-substituted FeSe, Commun. Phys. **6**, 175 (2023).

[3] Y. Cao, C. Setty, A. Kreisel, L. Fanfarillo, and P. J. Hirschfeld, Spin fluctuations in the ultranodal superconducting state of Fe(Se,S). Phys. Rev. B **110**, L020503 (2024).