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Direct observation of superconducting gap anisotropy in YNi_2B_2C : Angle-resolved photoemission spectroscopy TERUHISA BABA, Institute for Solid State Physics., Univ. of Tokyo, TAKAYOSHI YOKOYA, Okayama University, SHUNSHUKE TSUDA, SHIK SHIN, TADATAKA WATANABE, Institute for Solid State Physics., Univ. of Tokyo, MINORU NOHARA, HIDEAKI TAKAGI, Dept. of Advanced Materials Science., Univ. of Tokyo , TAMIO OGUCHI, Dept, of Quantum Matter., Hiroshima University — In a borocarbide superconductor YNi_2B_2C(T_c=15K), various experimental results have shown the existence of a gap anisotropy with node. More recently even the direction and type of node have been reported. However, the type of the nodal structure (point or line) seems to be controversial. Also, the position of the node on Fermi surfaces, which is essential for determining the origin of the large anisotropy, has not been clarified, yet. Therefore, we have performed low-temperature ultrahigh-resolution angle-resolved photoemission spectroscopy (ARPES) to clarify the origin of the large anisotropy. We successfully observed experimental valence band dispersions, Fermi surfaces, and momentum-dependent superconducting gap of YNi_2B_2C (001). Superconducting gaps have shown large anisotropy. From these results, we discuss possible orgins of the large anisotropy in YNi_2B_2C.

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