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Phase-sensitive scattering of Bogoliubov quasi-particles in $(Ca,Na)_2CuO_2Cl_2$ under magnetic field T. HANAGURI, Y. KOHSAKA, M. ONO, RIKEN (Inst. Phys. and Chem. Research), M. MALTSEVA, P. COLEMAN, Dept. of Phys. and Astronomy, Rutgers Univ., I. YAMADA, M. AZUMA, M. TAKANO, Inst. Chem. Research, Kyoto Univ., K. OHISHI, Japan Atomic Energy Agency, H. TAKAGI, RIKEN/ Univ. Tokyo — Magnetic-field effect on the quasi-particle interference (QPI) in $Ca_{1.86}Na_{0.14}CuO_2Cl_2$ ($T_c \sim 28$ K) has been studied using Fourier-transform spectroscopic-imaging scanning tunneling microscopy. In the absence of magnetic field, all scattering vectors expected from the octet model for QPI [1] were detected in the Fourier-transformed conductance-ratio maps [2]. We have found that magnetic field enhances (suppresses) the amplitude of the standing waves due to QPI if the signs of the d-wave superconducting order parameter in momentum space are the same (different) between initial and final states of the scatterings. Such sensitivity to the phase of the order parameter indicates that coherence factors play an important role.
[1] K. McElroy *et al.*, Nature **422**, 592 (2003).
[2] T. Hanaguri *et al.*, Nature Phys. published online/nphys753.

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