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**Role of spin-orbit scattering in quasiparticle interference** YUHKI KOHSAKA, RIKEN CEMS, MANABU KANOU, Materials and Structures Laboratory, Tokyo Institute of Technology, TADASHI MACHIDA, KATSUYA IWAYA, TETSUO HANAGURI, RIKEN CEMS, TAKAO SASAGAWA, Materials and Structures Laboratory, Tokyo Institute of Technology — Quasiparticle interference measured by scanning tunneling spectroscopy is profoundly affected by spin textures in momentum space. In this spin effect, used to study spin-polarized electronic states with scanning tunneling spectroscopy, spin of electrons are usually supposed to be preserved unless magnetic impurities are doped. We report that electron spin is indeed not preserved but rotated by nonmagnetic impurities in the process of quasiparticle interference of a spin-polarized two-dimensional electron gas formed on the surface of a polar semiconductor BiTeI. The results imply that spin-orbit scattering plays a significant role in quasiparticle interference of materials where spin-orbit interaction is strong.

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