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Nonequilibrium Dephasing in an Electronic Mach-Zehnder Interferometer SEOK-CHAN YOUN, KAIST, HYUN-WOO LEE, POSTECH, H.-S. SIM, KAIST — We study nonequilibrium dephasing in an electronic Mach-Zehnder interferometer. We demonstrate that the shot noise at the beam splitter of the interferometer generates an ensemble of nonequilibrium electron density configurations and that electron interactions induce configuration-specific phase shifts of an interfering electron. The resulting dephasing exhibits two characteristic features, a lobe pattern in the visibility and phase jumps of π , in good agreement with experimental data.

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