

Abstract Submitted
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Scanning tunneling microscopy of topological insulator $\text{Bi}_2\text{Te}_2\text{Se}$
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TAKAO SASAGAWA, Tokyo Institute of Technology — Using scanning tunneling
microscopy, we study a prototypical topological insulator $\text{Bi}_2\text{Te}_2\text{Se}$ having suppressed
bulk carrier density. Landau level states of its topological surface state
remarkably exhibit hysteresis behavior, which shift in energy controllably with the
limits of ramping bias, forming hysteresis loops thereafter. The observed hysteresis
behavior is attributed to the interplay between a tip-induced gating effect and an
impurity-generated random charging effect. This provides a new avenue to controlling
the topological surface state.

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