Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Shot Noise in Tunnel Barriers YUANZHEN CHEN, University of Maryland, RICHARD WEBB, University of South Carolina — We report a comprehensive study of the shot noise in tunnel barriers fabricated in GaAs/AlGaAs heterostructures. For most barriers tested a full shot noise $2eI$ is observed, in good agreement with theory. However, deviations from full shot noise, both suppression and enhancement, have also been observed. Shot noise in these barriers shows a complicated dependence on bias conditions and barrier settings. In some cases the observed deviation can be related to conduction processes involving impurities. Resonant tunneling through impurities is identified to cause shot noise suppression, while interacting impurity states is believed to be responsible for super enhanced shot noise.

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Date submitted: 29 Nov 2004 Electronic form version 1.4