

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Probing Non-Abelian Statistics in $\nu = 12/5$ Quantum Hall State¹

KAM TUEN LAW, Brown University — The tunneling current and shot noise between two Fractional Quantum Hall edges in $\nu = 12/5$ state in electronic Mach-Zehnder Interferometer with two quantum point contacts (QPCs) is studied. We show that the tunneling current and shot noise can be used to probe the existence of non-Abelian statistics in the $k = 3$ Read-Rezayi state. More specifically, the dependence of the current on the Aharonov-Bohm flux in the Read-Rezayi state is asymmetric under the change of the sign of the applied voltage. This property is absent in the Laughlin states. Moreover the Fano factor can exceed 12.7 electron charges in the $k = 3$ Read-Rezayi state. This number is much greater than the maximum possible Fano factor in all Laughlin states and the Moore-Read state which was shown previously to be e and $3.2e$ respectively.

¹This work was supported by the National Science Foundation under Grant No. DMR-0544116.

Kam Tuen Law
Brown University

Date submitted: 22 Nov 2007

Electronic form version 1.4