

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Fractional**

**Quantum Hall Effect from Phenomenological Bosonization**<sup>1</sup> VLADIMIR ZYUZIN, University of Maryland — In this work we propose a model of the fractional quantum Hall effect within conventional one-dimensional bosonization. It is shown that in this formalism the resulting bosonized fermion operator corresponding to momenta of Landau gauge wave function is effectively two-dimensional. At special filling factors the bulk gets gapped, and the theory is described by a sine-Gordon model. The edges are shown to be gapless, chiral, and carrying a fractional charge. The hierarchy of obtained fractional charges is consistent with existing experiments and theories. It is also possible to draw a connection to composite fermion description and to the Laughlin many-body wave function.

<sup>1</sup>ARO grant W911NF-09-1-0527 and NSF grant DMR-0955778.

Vladimir Zyuzin  
University of Maryland

Date submitted: 08 Nov 2012

Electronic form version 1.4