

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Topological confinement in bilayer graphene IVAR MARTIN, LANL,
YAROSLAV BLANTER, ALBERTO MORPURGO, Delft — We study a new type
of one-dimensional chiral states that can be created in bilayer graphene (BLG) by
electrostatic lateral confinement. These states appear on the domain walls separating
insulating regions experiencing the opposite gating polarity. While the states are
similar to conventional solitonic zero-modes, their properties are defined by the
unusual chiral BLG quasiparticles, from which they derive. The number of zero-
mode branches is fixed by the topological vacuum charge of the insulating BLG state.
We discuss how these chiral states can manifest experimentally, and emphasize their
relevance for valleytronics.

Ivar Martin
LANL

Date submitted: 16 Nov 2007

Electronic form version 1.4