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Energy gaps and Stark effects in boron nitride nanoribbons[1]
CHEOL-HWAN PARK, STEVEN G. LOUIE, Department of Physics, University of California at Berkeley, Berkeley, CA 94720 — Graphene nanoribbons, which have been recently synthesized, are regarded as promising candidate materials for nanoscale electronics. It is expected that boron nitride nanoribbons may be produced in a similar way. Notwithstanding their structural similarity, the electronic properties of boron nitride nanoribbons are qualitatively different from those of graphene nanoribbons. Here, we present first-principles calculations of the electronic properties of boron nitride nanoribbons with widths up to 10 nm both without any external potential or under a transverse electric field. The results show a rich set of behaviors and promise for possible applications of boron nitride nanoribbons in nanoscale electronics.

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