Abstract Submitted
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**Electronic properties of one-dimensional graphene bilayer ribbons**[1] BHAGAWAN SAHU, Microelectronics Research Center, University of Texas, Austin TX 78758, HONGKI MIN, ALLAN MACDONALD, Department of Physics, University of Texas, Austin, TX 78712, SANJAY BANERJEE, Microelectronics Research Center, Uniiversty of Texas at Austin, Austin, TX 78758 — The electronic properties of armchair and zigzag bilayer graphene nanoribbons are studied using *ab-initio* density functional theory. We study the effect of width and the electric fields (upto the dielectric breakdown field of SiO2) on their energy gaps [Sahu 2007]. We find metallic and semiconductor arm-chair ribbons and electric field has the effect of increasing the gap in metallic ribbons. The zigzag ribbons due to the edge magnetism show opposite behavior: gap decreases with increase in the applied electric field. We studied small ribbons (below 1 nm) as well as large ribbons (5 nm). In small width arm-chair semiconductor ribbons, the gap decreases whereas in the large width ribbons, the gap increases with applied electric field. Sahu B, Min H, MacDonald AH, and Banerjee SK "Electronic properties of one-dimensional graphene bilayer ribbons" (Submitted to Physical Review B).

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Bhagawan Sahu
Microelectronics Research Center, University of Texas, Austin TX 78758

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