

Abstract Submitted  
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**Effect of Surface Bonding on Semiconductor Nanoribbon Wiggling Structure**<sup>1</sup> YU ZHANG, Department of Materials Science and Engineering, University of Utah, MINRUI YU, DONALD SAVAGE, MAX LAGALLY, ROBERT BLICK, University of Wisconsin-Madison, FENG LIU, Department of Materials Science and Engineering, University of Utah — SiGe nanomembranes and nanowires provide one important class of stretchable electronic materials. We have investigated a very interesting wiggling phenomenon of SiGe nanoribbons bonded to Si substrate as experimentally observed in a Hall-bar structure. Based on continuum linear stability analysis, we establish a scaling rule between the wiggling period and surface bonding area, in relation to the ratio of strain energy over the interfacial bonding energy. We show that surface bonding plays an important role in morphological deformation of the SiGe nanoribbon structure. Our studies have significant implications in fabricating self-assembled nanostructures on surfaces, and their potential application in stretchable electronics.

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