

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Semiconductor-half-metal**

**transition in zigzag-graphene-nanoribbons/graphene** MINGXING CHEN,  
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— Magnetic and electronic properties of H-terminated zigzag graphene nanoribbons supported by graphene substrate are investigated using first-principles calculations. A critical width of 3 nm is found for the onset of electron-electron interactions between the edges. Weak edge magnetism of the nanoribbons is well preserved upon the presence of the graphene substrate due to the weak interaction between them, which on the other hand drives a size-dependent spin splitting of the edge states. As a result of the interaction, a semiconductor-halfmetal transition is observed. Our findings not only are of fundamental interest but also have practical implications in potential applications of graphene-based nanoelectronics.

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Date submitted: 14 Nov 2014

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