

Abstract Submitted  
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**Continuous Neel to Bloch transition as thickness increases:  
statics and dynamics** KONSTANTIN ROMANOV, KIRILL RIVKIN, YURY  
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Texas A&M University — This work studies the magnetic behavior of infinitely  
long ferromagnetic strips. Two different kinds of domain walls parallel to the long  
direction can occur in this system: Neel domain wall and Bloch domain wall. In  
very thin strips the Neel domain wall is energetically favorable. However, as the  
strips thickness increases, the energy of the Neel wall rapidly grows and at some  
critical thickness its exceeds the energy of the Bloch domain wall. The nature of  
this transition is not well understood. We analyze this system with the help of  
numerical and analytical methods. We found that it exhibits a type-II phase tran-  
sition. The ground states on both sides of the transition are analyzed. For thicker  
samples, above the transition an asymmetric Bloch wall appears, in a 2nd order  
phase transition.

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