Abstract Submitted
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**Surface Superconductivity in the 'Partial' Superconductor $BaFe_2As_2$**[1] T. D. BLASIUS, Physics/University of Michigan, J. S. KIM, E. G. KIM, G. R. STEWART, Physics/University of Florida, T. VOJTA, Physics/Missouri University of Science and Technology — The partial superconductivity (resistive transition to $\rho$=0, but no bulk anomalies) in undoped $BaFe_2As_2$, as well as in other $MFe_2As_2$ compounds, has been a puzzle. Sample dependence plays a large role in the superconductivity, and hints have been found for a sensitivity of the surface to exposure to air. Based on a fairly reliable ability to produce such superconducting samples (with a yield of $\sim$ 50%), and the clue from a previous work [1] that the critical current of the superconductivity is abnormally low, we show here that the superconductivity is a 2-dimensional affect – presumably on the surface. [1] J. S. Kim, et al., J. Phys.: Condens. Matter **21**, 342201 (2009).

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