

Abstract Submitted  
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**Phase Transitions in Nanostructured  $\text{Mn}_{0.18}\text{TaS}_2$** <sup>1</sup> LUCAS BEVING, MATHEW FLEMING, PAYTON BURKEN, PAUL SHAND, TIMOTHY KIDD, LAURA STRAUSS, University of Northern Iowa — Phase transitions in a sample of Mn-intercalated  $\text{TaS}_2$  were investigated. The concentration of manganese relative to tantalum was determined to be 18%. The phase transitions of the sample were explored using a variety of techniques: Curie-Weiss, Critical Scaling, Arrott-Noakes, and Kouvel-Fisher. All but the first method include the use of critical exponents defined using the spontaneous magnetization and susceptibility in zero applied field. The sample was found to undergo a transition from paramagnetism to an ordered state below 100 K. Two of the aforementioned methods were converted to computational methods. These same methods for determining the transition temperature and critical exponents may also indicate the existence of a second transition very close to the first. These results have been extracted using the theory of scaling.

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