

Abstract Submitted  
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**Inelastic Neutron Scattering Excitations for a Spin  $\frac{3}{2}$  Tetramer:  
Application to Magnetic Excitations in  $\text{Na}_3\text{RuO}_4$**  J. T. HARALDSEN, Uni-  
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Facility, Rutherford Appleton Laboratory — We examine the magnetic properties  
and inelastic neutron scattering excitations for spin  $3/2$  tetramer using an isotropic  
Hamiltonian. Results on magnetic excitations observed in polycrystalline sodium  
ruthenate ( $\text{Na}_3\text{RuO}_4$ ) are compared to the theoretical predictions. Previous work  
has suggested that this material consists of relatively isolated tetramers of  $S=3/2$   
Ru(V) ions, where a Heisenberg antiferromagnetic Hamiltonian was proposed. We  
determine that tetramer model (interacting dimers) may not be a good candidate  
for the magnetic structure of the system. Using three separate models, we compare  
parameters determined from magnetic susceptibility and inelastic neutron scatter-  
ing structure factors, which suggest that separate dimers may be a more plausible  
model. However, future studies on single crystals are suggested to help clarify the  
apparent discrepancies between these model and our results.

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