

Evidence of Long-Range Magnetic Ordering in Double Perovskite $\text{Ba}_2\text{CaOsO}_6$ using Muon Spin Relaxation

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Abstract

Magnetic properties of the double perovskite $\text{Ba}_2\text{CaOsO}_6$ were investigated using muon spin relaxation techniques. Although prior studies have observed specific heat and magnetic susceptibility anomalies around $T = 50$ K, definitive conclusions have not been established regarding the nature of the magnetic transition and ground state. Recently, muon spin relaxation studies on $\text{Ba}_2\text{CaOsO}_6$ have clearly shown long-lasting muon spin precessions below 50 K, an indicative signature of long-range magnetic ordering. Results suggested a $0.22 \mu_B$ upper limit for the $\text{Ba}_2\text{CaOsO}_6$ ordered moment size, comparable with moment sizes observed in similar antiferromagnetic compounds belonging to the double perovskite family.

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