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Magnetic Properties of Fe_3O_4 Nanoparticle Assemblies DALTON GRINER, KARINE CHESNEL, DALLIN SMITH, YANPING CAI, MATEA TREVINO, BYU Phsyics and Astronomy, ALEX REID, SLAC Stanford — We are studying magnetic ordering and magnetic properties in Fe_3O_4 nanoparticles assemblies. These particles have a variety of applications, including: drug targeting, cancer therapy and MRI applications. We have recently (in February 2015) performed a synchrotron experiment at SLAC at Stanford, to measure the X-ray magnetic circular dichroism (XMCD) and the X-ray Resonant Magnetic Scattering (XRMS) signal of nanoparticles we freshly prepared. We use the XMCD signal to extract the spin and orbital magnetic moments in Fe_3O_4. In addition, we use the XRMS patterns to extract a magnetic profile that provides information about the magnetic order in the nanoparticle assembly and its dependency on particle size and concentration.

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