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Muon Spin Relaxation/Rotation Studies of Novel Magnetic Systems

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Muon spin relaxation/rotation is a powerful technique for probing magnetism in materials. As a real space probe, the muon complements neutron scattering's reciprocal space sensitivity. Muons probe magnetic fluctuations in a frequency window between inelastic neutron scattering and nuclear magnetic resonance. In this presentation I will describe our recent work on geometrically frustrated materials including the pyrochlore lattice compounds $Yb_2Ti_2O_7$, $Gd_2Pt_2O_7$, $NaCaNi_2F_7$ and others. I will also discuss μ SR's volume fraction sensitivity as applied to the transition from hidden order to antiferromagnetism in heavy fermion $U(Ru_{1-x}Fe_x)_2Si_2$ and $U(Ru_{1-x}Os_x)_2Si_2$.