

Experimental Physics Seminar

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Willet Science Center 101

Seeing through a different light – Study of molecular magnetism and superconductivity with microwaves

Microwaves, which have been used widely in our daily lives, are also very powerful in material science research. In this seminar, I will present two methods of using microwaves to study electromagnetic properties of solid state materials. The first one is mostly widely used, which takes the most advantages of microwave cavity perturbation. This approach is especially good for studying global properties of materials. I will present my study of the spin behaviors of various single-molecule magnets. The second approach takes advantage of the localized evanescent waves emitted from a microwave antenna, which is capable of probing local electromagnetic properties with spatial resolution as good as $\sim 10\text{nm}$. I will present my research on nonlinear electromagnetic responses from a high-temperature superconductor, $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$.

Please join us for light refreshments at 3:15pm outside WSC 109.