

**University of Wisconsin-Milwaukee**

**Dept. of Physics  
COLLOQUIUM**

*How to See Antiferromagnetic Domains  
and Domain Walls*

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**3:30 – 4:30 PM**

**KIRC 1150**

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In this talk, I will introduce myself and discuss my journey as an experimental condensed matter physicist, explaining the field briefly. I will then focus on my recent research activities and interests, specifically on imaging antiferromagnetic domains and domain walls.

Magnetic domains play a fundamental role in the physics of magnetism, and their manipulation can be achieved through domain wall (DW) propagation. The discovery of electric-field-driven switching of antiferromagnetic (AFM) spin arrangement has reignited interest in the field of spintronics using antiferromagnets. Despite the potential of antiferromagnetic materials for use in future electronic devices, the dynamics of antiferromagnetic domain walls are poorly understood due in large part to the lack of techniques for visualizing AFM DWs. In this presentation, I will introduce a recently developed coherent X-ray imaging technique, a diffraction-based full-field imaging method that produces real-time, direct space images. With this technique, we can study fluctuating micrometer-scale antiferromagnetic domains on timescales from  $10^{-2}$  to  $10^3$  sec., with the potential to improve the resolution to  $\sim 10^{-11}$  sec. in the future.

