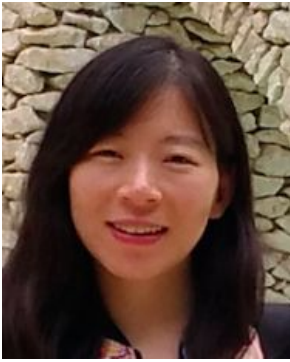


## ASTROPHYSICS SEMINAR SERIES



### **Dr. Siyao Xu**

Hubble Postdoctoral Fellow, Department of Astronomy,  
University of Wisconsin

Tuesday, January 28 12:30 pm - Rm 184 NSH

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## **Turbulent dynamo in the universe**

Magnetic fields fill the universe. They play a fundamental role for many astrophysical processes over a vast range of length scales through the evolution of the universe. In spite of the importance, magnetic fields and their origin are poorly understood. The universe was not born magnetized. The big question is how the universe has become magnetic. Turbulence, which is also ubiquitous in the universe, is found to be responsible for the generation and maintenance of cosmic magnetic fields, via the turbulent dynamo, a mechanism to amplify magnetic fields by turbulent motions. The recently developed dynamo theory brings the dynamo from the linear regime to astrophysically relevant nonlinear regimes. I will introduce the basic physics of this dynamo theory, its numerical tests, and its applications to a variety of astrophysical systems from the first stars to the large scale structure of the universe, showing the origin of the tangled web of magnetism across the universe.



PHYSICS