

**Joint CMP/CORE-CM Seminar  
Michigan State University**

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University of Washington**

*Spin and pseudospins in 2D semiconductors*

Electronic valleys are extrema of Bloch energy bands in momentum space. Having multiple valleys gives the electron states pseudospin degrees of freedom in addition to their real spin. In this talk, I will discuss our experimental progress on the investigation of spins and pseudospins using atomically thin semiconductors, which are either single or bilayer group VI transition metal dichalcogenides. These new 2D semiconductors behave as remarkable excitonic systems, providing an exciting laboratory for optical manipulation and electrical control of the valley degrees of freedom. I will also discuss strong coupling effects between spin, valley, and layer pseudo-spins in bilayers, which lead to enhanced lifetimes and allow electrical control of spin states.

**Monday, November 3, 2014**

**4:10 PM**

**BPS 1400**

**Prof. John McGuire - Host**