

Jay Strader – Colloquium seminar – October 7, 2021  
MSU

Title: Don't Fear the Spiders: New Insights from Redback Millisecond Pulsars

Abstract: It is well-established that fast-spinning millisecond pulsars are neutron stars recycled through accretion from binary star companions. For most millisecond pulsars the accretion process has permanently ceased, and they are in binary systems with low-mass white dwarf companions. Follow-up observations of newly discovered gamma-ray sources from the Fermi Gamma-Ray Space Telescope have revealed a substantial population of "spider" millisecond pulsars with hydrogen-rich companions; these systems had mostly been missed in radio pulsar surveys. I will discuss the properties of neutron stars in these binaries and constraints on the maximum mass of neutron stars. I will also discuss new candidate members of the rare class of transitional millisecond pulsars, systems that switch between pulsar and accretion disk states on short timescales.