

Abstract for an Invited Paper  
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### **Limits to Neutron Star Spin**

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Over the past decade our understanding of accreting neutron stars has been revolutionized. Observations with NASA's Rossi X-ray Timing Explorer (RXTE) have resulted in the discovery of fast, coherent X-ray intensity oscillations (hereafter, "burst oscillations") during thermonuclear X-ray bursts from 13 low mass X-ray binaries (LMXBs). Although many of their detailed properties remain to be fully understood, it is now beyond doubt that these oscillations result from spin modulation of the thermonuclear burst flux from the neutron star surface. In addition, RXTE observations led to the discovery of the first accreting millisecond pulsars, the sample of which now includes six systems, several of which are in extremely compact binary systems with essentially massive planet companions. These millisecond timing phenomena are providing powerful new probes of the formation, evolution and structure of neutron stars. I will describe recent efforts to constrain neutron star structure using detailed modelling of their properties. I will also discuss what the observed distribution of neutron star spin frequencies is telling us about the torques which may act to limit the ultimate spin up of accreting neutron stars.