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A Two Solar Mass Neutron Star

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There are over 200 known radio millisecond pulsars in the Galaxy and its globular cluster system. These incredibly stably and rapidly rotating neutron stars can be “timed” over timescales of weeks to decades to provide extremely precise measurements of a variety of interesting physical parameters and/or effects. Improvements in timing precision and a doubling of the number of known millisecond pulsars over the past 5-6 years are allowing us to make significantly better mass measurements of many neutron stars. In this talk I report on recent progress in the field, including a precise measurement of a two Solar mass neutron star, PSR J1614-2230, via relativistic Shapiro delay. This single measurement has many implications for the nature of matter at supra-nuclear densities and on a variety of topics in astrophysics.