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Simultaneous determinations of neutron star radii and masses, and the equation of state

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Neutron stars offer the unique possibility of probing the equation of state of cold, ultradense matter in a region of the QCD phase diagram that is otherwise inaccessible. I will describe a technique that allows simultaneous determinations of neutron star radii and masses and show recent measurements that tightly constrain the radius of 10 neutron stars. Combined with mass measurements from pulsar timing, these radii measurements allows for the first astrophysical inference of the pressure of cold matter above nuclear saturation density.