

## **Measuring the Mass-Radius Relation of Neutron Stars**

Frits Paerels

Department of Astronomy and Columbia Astrophysics Laboratory

Columbia University

Eighty years since the first mention of neutron-degenerate objects in the literature, and we still have not directly measured the mass-radius relation of neutron stars to reasonable precision. Precise constraints on the interior structure of at least a few neutron stars would provide unique information on the 'Cold Equation of State' of matter, and may illuminate the evolutionary prehistory of the stars (there could be multiple paths to the neutron star state).

I will describe attempts and prospects for using photospheric X-ray spectroscopy of hot neutron stars for this purpose, and illustrate the interplay of radiative transfer, rotation, general relativity, and nuclear physics to produce the richest and most bizarre stellar spectroscopy we will ever see.