

APR18-2018-000654

Abstract for an Invited Paper  
for the APR18 Meeting of  
the American Physical Society

### **Testing General Relativity Using a Pulsar in a Triple System<sup>1</sup>**

ANNE ARCHIBALD, Universiteit van Amsterdam / ASTRON

The millisecond pulsar PSR J0337+1715 is in a 1.6-day orbit with an inner white dwarf companion, and the pair is in a 327-day orbit with an outer white dwarf companion. This hierarchical triple provides an excellent laboratory to test a key idea of Einstein's theory of gravity, the strong equivalence principle (SEP): do all objects, even those with strong gravity like neutron stars, fall the same way in the same gravitational field? Almost all alternative theories of gravity predict violations of the SEP at some level. We have carried out an intensive program of timing this pulsar, and we are able to perform a very sensitive test of the SEP. I will discuss our methods, our result, and its theoretical implications.

<sup>1</sup>Supported by an NWO Veni fellowship