

Abstract Submitted
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Detecting gravitational waves with pulsar-timing arrays: a case of astrophysical forensics MICHELE VALLISNERI, Jet Propulsion Laboratory/Caltech — Pulsar-timing arrays have recently reached maturity as the "third way" to gravitational-wave (GW) detection, besides ground-based interferometers and future space-based observatories. PTA campaigns target the very-low-frequency band centered around 10^{-8} Hz, so they will yield science complementary to the other two programs. For this speaker, much of the fascination with PTAs lies in the fact that they represent a grand experiment in precision measurement that was set up by Nature herself, so we have rather little control on it, and few knobs to turn. Improvements in sensitivity will come as much from ever more powerful radiotelescopes as from a better understanding of the "detectors" (neutron stars, their dynamics in binaries, the interstellar medium, ...), and from deeper, more probing analyses of the data we already have. A positive GW detection claim will require making a watertight case of astrophysical forensics, proving beyond any reasonable doubt that systematics are under control, and designing the complex inference chain that points to the presence GWs in its most unequivocal and defensible form. I discuss how these goals and concerns informed the development of recently published constraints on the astrophysical population of supermassive black-hole binaries.

Michele Vallisneri
Caltech

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