Gravitational wave friction in light of GW170817 and GW190521

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— In this talk I will present results
on constraining cosmological parameters and theories of gravity beyond General Rel-
ativity (GR) using gravitational waves (GW). Specifically, we use the GW events
GW170817 and GW190521, together with their proposed electromagnetic counter-
parts, and consider models with a time-varying Planck mass, large extra-dimensions,
and a phenomenological parametrization covering several beyond-GR theories. In
all three cases, this introduces a friction term that effectively modifies the GW lumi-
nosity distance. We set constraints on Lambda-CDM and GR deviation parameters
using two sets of priors on the Hubble constant and matter energy density. With
priors set to the measured Planck's values, the inclusion of GW190521 improves the
two GR deviation parameters constraints by a factor ~ 10. We report a number of
space-time dimensions compatible with 4 with an precision of 2.5% (at 95% CL) and
an upper limit to the variation of Newton's constant at the epoch of GW170817 of
$< 20\%$. With wide priors we find that the constraints on GR deviation parameters
are a factor $2 - 6$ worse than the ones obtained using the restricted priors.

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