

Constraining deviations from general relativity using strongly lensed gravitational wave event

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Deviations
from GR

Strong
Lensing

**Deviations
from GR**

Strong
Lensing

**Deviations
from GR**



GW
propagation
differ from GR

Deviations from GR

GW
propagation
differ from GR

Amplitude
differ from GR

Distance differ
from GR

This is
what we
can
measure

Deviations from GR

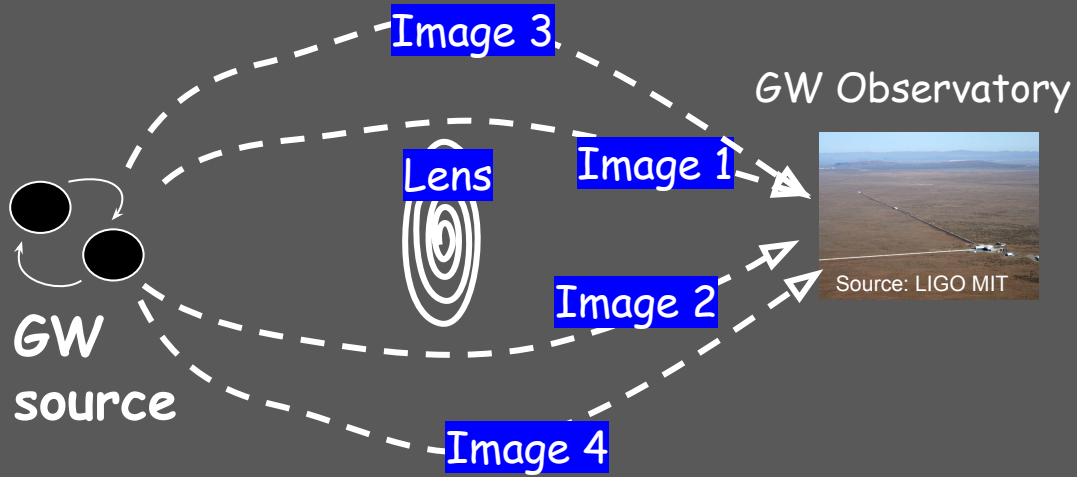
Some Examples

- Extra dimensions theories*
- Scalar-tensor theories*
- Time varying Planck mass*

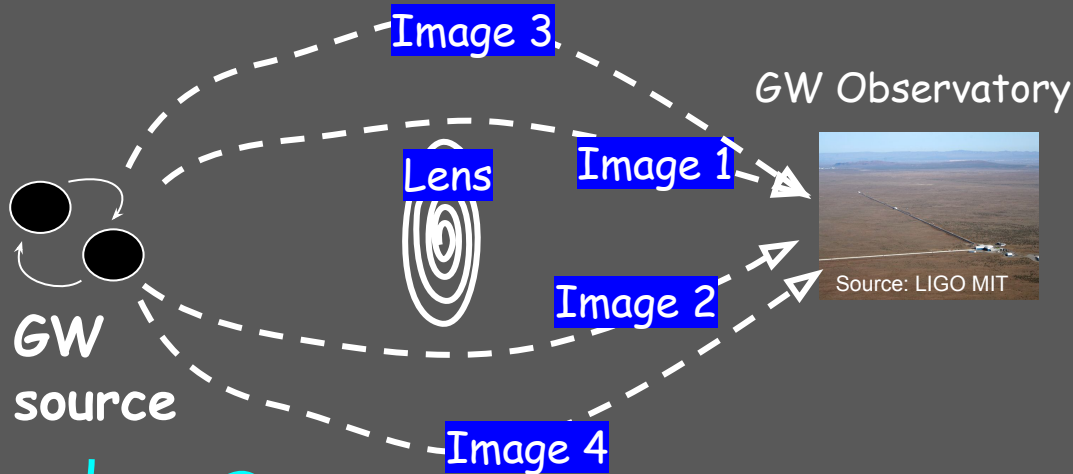
**Deffayet et al 2007 and Belgacem et al 2018 and Lagos et al 2019*

Deviations
from GR

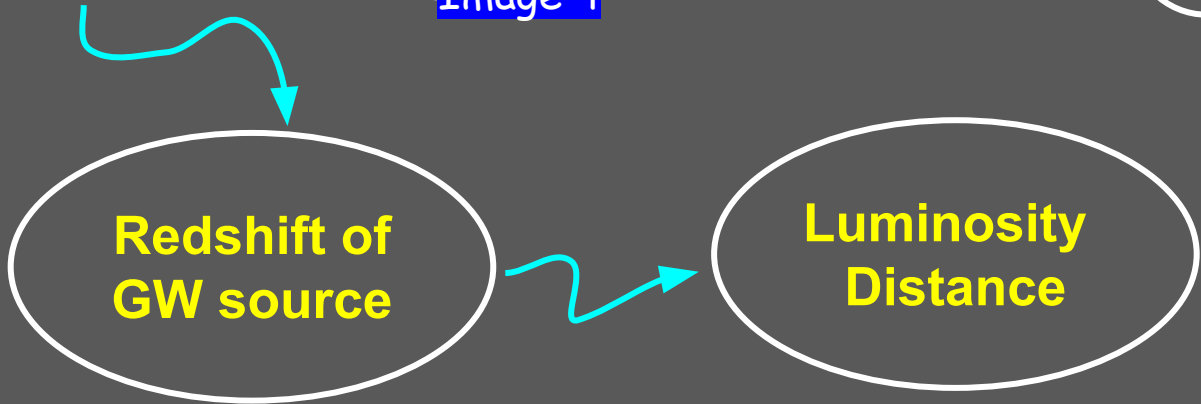
**Strong
Lensing**

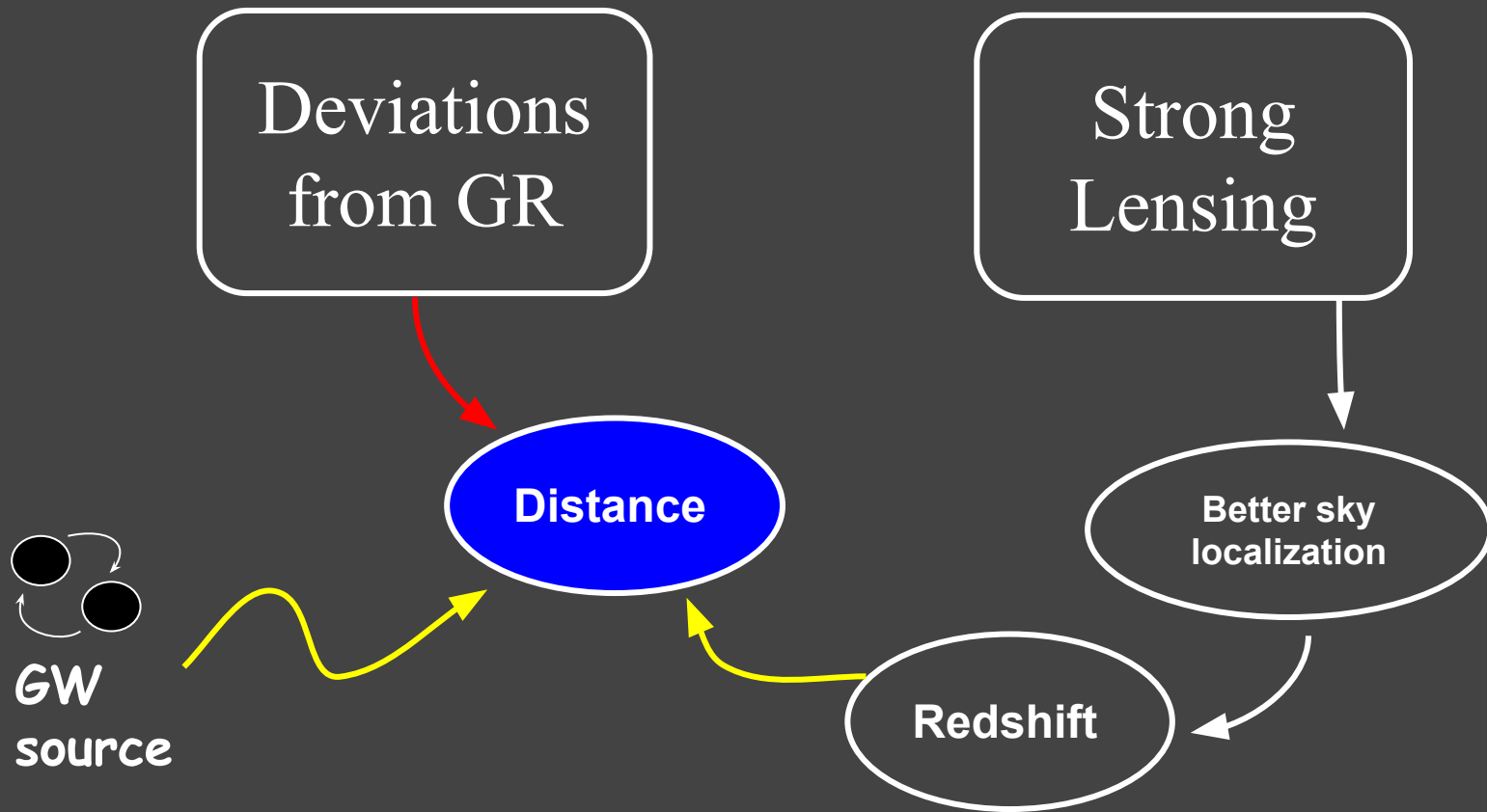


Strong Lensing

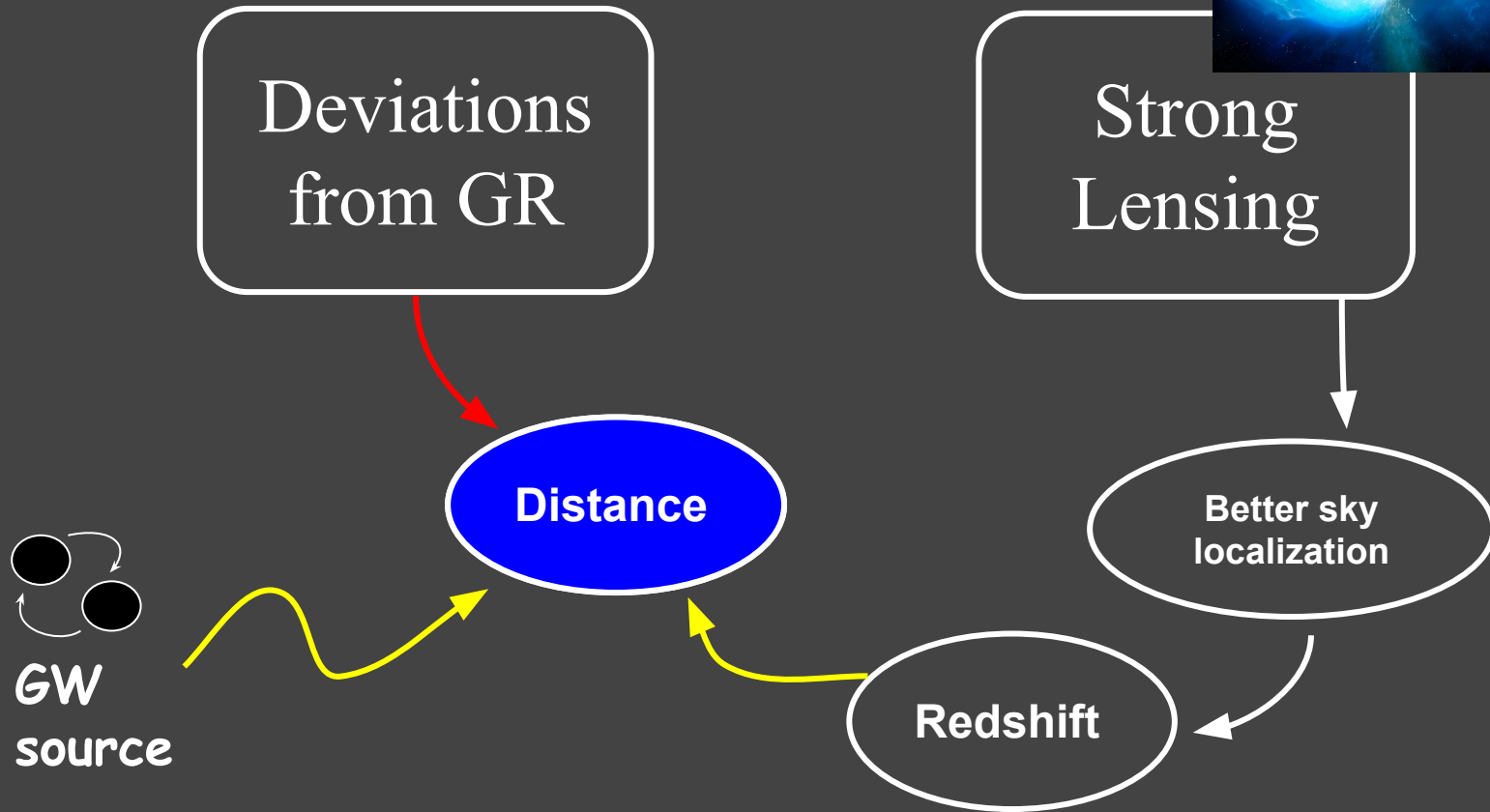


Strong Lensing

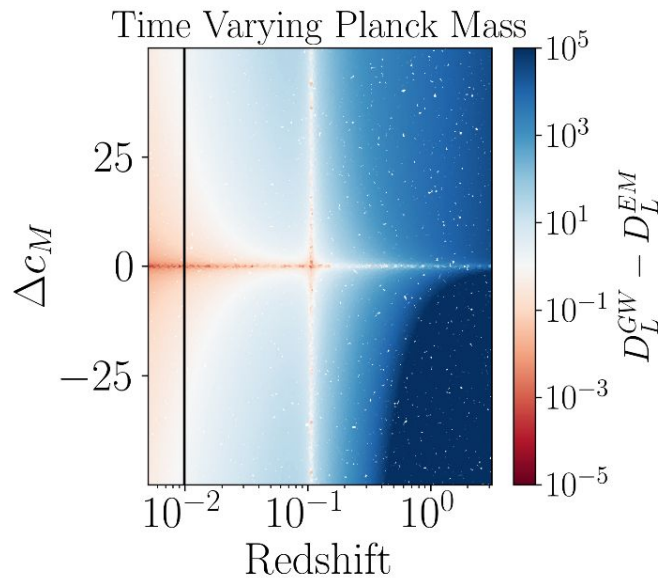
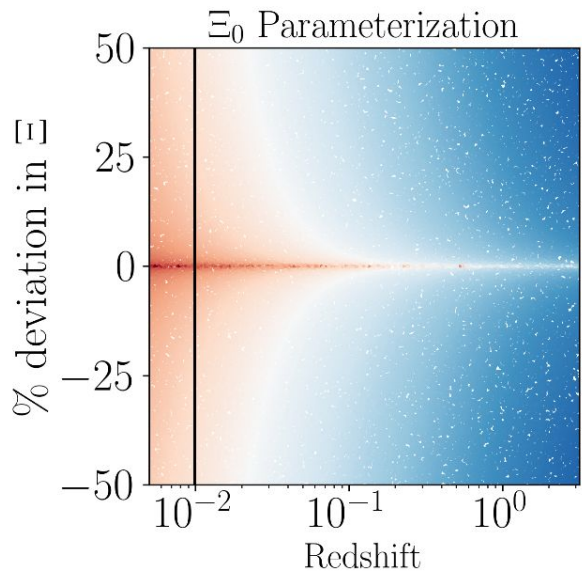
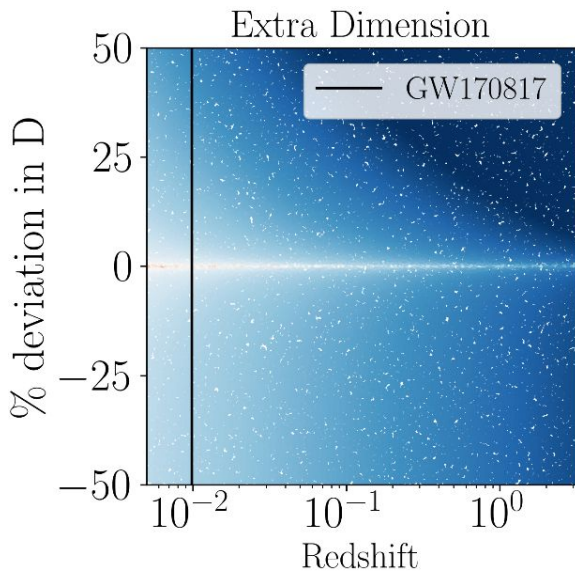




Binary Neutron Stars



Result I:

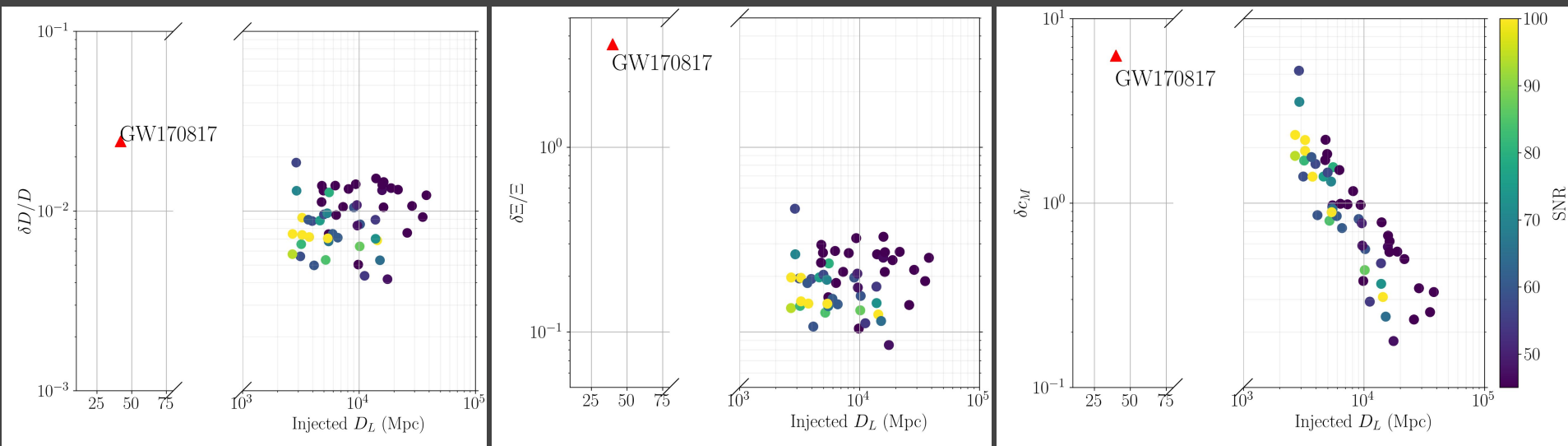


Result II:

Extra dimensions

Scalar-tensor

Time varying Planck mass

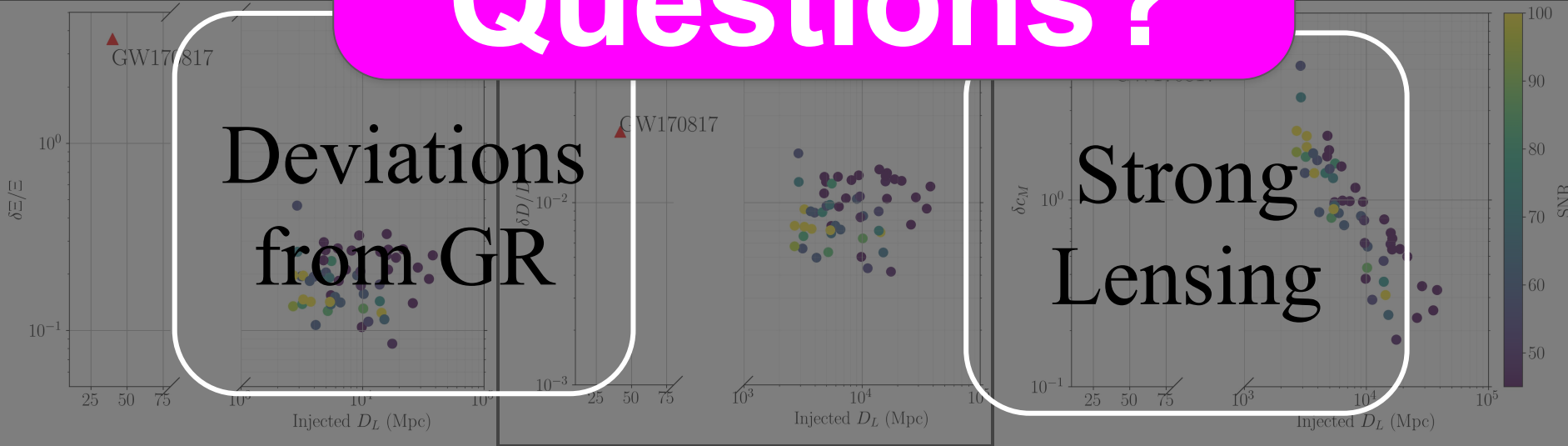


Result II:

Thank you!
Questions?

Scalar-tensor

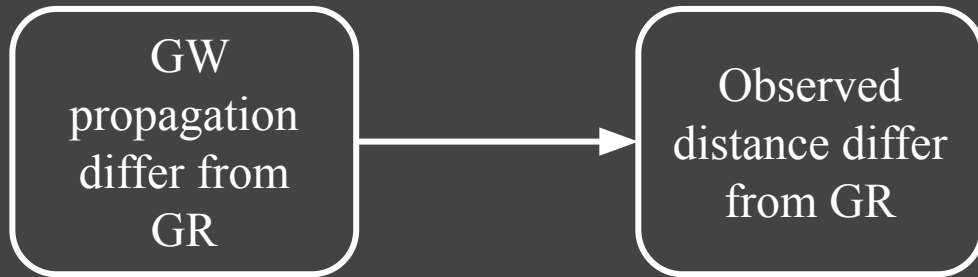
Planck mass



Deviations
from GR

Strong
Lensing

What kind of deviations from GR?



Some Examples

- Extra dimensions theories (D)
- Scalar-tensor theories $(\underline{E}, n)^*$
- Time varying Planck mass $(\underline{c}_M)^*$