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Inference of the neutron star equation of state from cosmological distances CARL-JOHAN HASTER, Massachusetts Institute of Technology, KATERINA CHATZIIOANNOU, California Institute of Technology, ANDREAS BAUSWEIN, GSI Helmholtz Center for Heavy Ion Research, JAMES CLARK, Georgia Institute of Technology — Finite-size effects on the gravitational wave signal from a neutron star merger typically manifest at high frequencies where detector sensitivity decreases. Proposed sensitivity improvements can give us access both to stronger signals and to a myriad of weak signals from cosmological distances. The latter will outnumber the former and the relevant part of signal will be redshifted towards the detector most sensitive band. I will present a study of the redshift dependence of information about neutron star matter and find that single-scale properties, such as the star radius or the post-merger frequency, are better measured from the distant weak sources from $z \sim 1$

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