Gravitational wave memory in an expanding universe ALEXAN-
DER TOLISH, ROBERT WALD, The University of Chicago — We investigate the
gravitational wave memory effect in an expanding FLRW spacetime. We find that if
the gravitational field is decomposed into gauge-invariant scalar, vector, and tensor
modes after the fashion of Bardeen, only the tensor mode gives rise to memory, and
this memory can be calculated using the retarded Green's function associated with
the tensor wave equation. If locally similar radiation source events occur on flat
and FLRW backgrounds, we find that the resulting memories will differ only by a
redshift factor, and we explore whether or not this factor depends on the expansion
history of the FLRW universe. We compare our results to related work by Bieri,
Garfinkle, and Yau.

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