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Gravitational wave memory observables ALEXANDER GRANT, EANNA FLANAGAN, Cornell University, ABRAHAM HARTE, University College Dublin, DAVID NICHOLS, Radboud University — Gravitational wave memory is characterized by the permanent relative displacement of a pair of initially comoving test particles caused by the passage of a burst of gravitational waves. We describe a number of generalizations of this effect. For initially comoving, spinless test particles these effects were identified in previous work and include a net relative boost, a net relative rotation of their inertial frames, and a difference in elapsed proper time. For particles with an initial relative velocity, these observables can be used to measure the spin memory effect of Pasterski, Strominger and Zhiboedov, while for particles with spin, there are additional, qualitatively different observables which we describe.

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