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Efficient Estimation of Barycentered Relative Time Delays for Distant Gravitational Wave Sources ORION SAUTER, Univ of Michigan - Ann Arbor, VLADIMIR DERGACHEV, Albert Einstein Institute, KEITH RILES, Univ of Michigan - Ann Arbor — Accurate determination of gravitational wave source parameters relies on transforming between the source and detector frames. All-sky searches for continuous wave sources are computationally expensive, in part, because of barycentering transformation of time delays to a solar system frame. We investigate approximations for determining time delays of signals received by a gravitational wave detector with respect to the solar system barycenter. A highly non-linear conventional computation is transformed into one that has a pure linear sum in its innermost loop.

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