Abstract Submitted
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Relativistic Three-Body Equations in a Wavelet Basis[1] WAYNE POLYZOU, FATIH BULUT, University of Iowa — We show how to use Daubechies' wavelets to reduce the relativistic Faddeev-Lovelace equations to approximate linear equations with sparse matrices. We transform the equations to a form where the spectator and two-body relative momenta are separated. We use the renormalization group equation for the scaling basis functions [1][2] to accurately and efficiently compute scaling basis matrix elements of the transformed three-body kernel with moving singularities. The wavelet transform provides a fast (O(N)) mapping from the scaling basis to the wavelet basis, where the kernel can be accurately approximated by a sparse matrix.

[1] B. Kessler, G. L. Payne, W. N. Polyzou, Phys. Rev. C70,034003(2004).
[2] B. M. Kessler, G. L. Payne, W. N. Polyzou Few-Body Systems, 33,1(2003).

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