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2nd-order self-force: mode decomposition of the 1st-order puncture

Monday, 3 July 2023 16:00 (20 minutes)

As part of computing the 2nd order gravitational self-force in Schwarzschild (see talks by Pound, Wardell, Upton, and others), we need to decompose the 1st-order puncture field into Barack-Lousto-Sago (BLS) tensor-spherical-harmonic components. Conceptually this is easy: we just integrate the puncture field against each BLS basis function. In practice, there are many thousands of such integrals, and computing them numerically is both expensive and ill-conditioned. In this talk I'll discuss how these integrals can be computed analytically.

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