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Angular Momentum Flux in the Scalar Self-Force Problem SAMUEL CUPP, Austin Peay State University, PETER DIENER, Lousiana State University — The scalar self-force problem consists of a scalar point charge orbiting a supermassive black hole. The object is small enough that the perturbation of space-time due to its mass is inconsequential, and the only forces are gravity and the self-force. The self-force is a force on the inspiraling particle that results from the back-scattering of the object's own field off of curved space-time. I derived an accurate calculation of the angular momentum flux for the scalar self-force problem and implemented it into a preexisting (3 spatial +1 time) dimensional code. We then compared our results to very precise frequency domain calculations. The angular momentum flux calculations yield results that converge to the actual value of 0.0124682173 M^2. However, the calculations currently converge at about .7 order, and the reason for this extremely slow convergence is currently unknown.

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