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Self force on a particle in curved spacetime SWAPNIL TRIPATHI, ALAN WISEMAN, JOHN FRIEDMAN, TOBIAS KEIDL, University of Wisconsin-Milwaukee — The finite part of the self force on a static scalar charge in a Schwarzschild spacetime is calculated here using a mode by mode expansion of Green's function. The Quinn-Wald axioms [2,3] have been used to regularize the self force. The directional part of the self force has been identified and substracted which simplfies the calculation a lot by making it possible to use symmetries. The motivation for this calculation is to develop techniques and formalism for use in calculations of the self forces (dissipative and conservative) acting on charges and masses moving in black hole spacetimes.

[1] A.G. Wiseman, Phys. Rev. D61 (2000) 084014.
[2] T.C. Quinn, Phys. Rev. D62(2000) 064029.
[3] T.C. Quinn, R.M. Wald Phys. Rev. D56 (1997) 3381.

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