LECTURE

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The self-force problem in black hole spacetimes. I:
Scalar perturbations in a Schwarzschild spacetime
1 lesson of two hours

The self-force program is introduced and discussed, with special attention to the scalar pertubations (zero spin) and to complete analytic calculations in the Schwarzschild spacetime. Related topics: mode sum expansion, regularization techniques, gauge modes,

The self-force problem in black hole spacetimes. II:
Gravitational perturbations in a Schwarzschild spacetime.
1 lesson of two hours

The gravitational perturbation equations (spin 2) in the Schwarzschild background are analyzed in the Regge-Wheeler gauge explicitly performing analytic computation in a Post-Newtonian scheme. It is shown how to evaluate gauge-invariant quantities expressed in turn in terms of gauge invariant variables. Related topics: different parity perturbations, metric reconstruction, regularization, converting information in the Effective-One-Body formalism.