Canonical energy and linear stability of Schwarzschild KARTIK
PRABHU, Cornell University, ROBERT WALD, University of Chicago — Consider
linearised perturbations of the Schwarzschild black hole in 4 dimensions. Using
the linearised Newman-Penrose curvature component, which satisfies the Teukolsky
equation, as a Hertz potential we generate a 'new' metric perturbation satisfying the
linearised Einstein equation. We show that the canonical energy, given by Hollands
and Wald, of the 'new' metric perturbation is the conserved Regge-Wheeler-like
energy used by Dafermos, Holzegel and Rodnianski to prove linear stability and
decay of perturbations of Schwarzschild. We comment on a generalisation of this
strategy to prove the linear stability of the Kerr black hole.

Kartik Prabhu
Cornell University