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Gauge invariant perturbations of Petrov type D space-times[1]
BERNARD WHITING, Univ of Florida - Gainesville, ABHAY SHAH, University of Southampton — The Regge-Wheeler and Zerilli equations are satisfied by gauge invariant perturbations of the Schwarzschild black hole geometry. Both the perturbation of the imaginary part of Ψ_2 (a component of the Weyl curvature), and its time derivative, are gauge invariant and solve the Regge-Wheeler equation with different sources. The Ψ_0 and Ψ_4 perturbations of the Weyl curvature are not only gauge, but also tetrad, invariant. We explore the framework in which these results hold, and consider what generalizations may extend to the Kerr geometry, and presumably to Petrov type D space-times in general.

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