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Perturbative Solutions of the Einstein Klein-Gordon Equations

GIANLUCA PULITI, Embry-Riddle Aeronautical University, MARA JENNINGS, ERAU, VINCENT MAMO, George Washington University, CHRIS VUILLE, ERAU — As the Klein-Gordon equation is important in quantum theory and describes spin-0 particles, it is of interest to discover the nature of the gravity field such particles would be expected to create. In this paper, we solve the static, massive Einstein-Klein-Gordon (EKG) equations in perturbation, and compare the results with a similar calculation developed for the Einstein-Proca system. Subsequently, we study the massless static Klein-Gordon equation, and compare the result to the Reissner-Nordstrom metric.

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