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Title: Classical soft graviton theorem in four dimension

Abstract:

Due to infrared divergence of S-matrix, soft graviton theorem has logarithmic terms at subleading order in the expansion of soft momentum in four dimension. In a classical scattering process the subleading soft graviton factor is related to the tail of gravitational waveform at late and early retarded time. We analyze the low energy radiation emitted during classical scattering to prove the subleading soft graviton theorem. We also have a new conjecture for the sub-leading tail term of the gravitational waveform.