

Abstract Submitted
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Wheeler-Feynman absorber revisited: a useful technique to calculate decay rates and lifetimes in small scale optical systems MURUGESAN VENKATAPATHI, Indian Institute of Science — The Wheeler-Feynman (WF) absorber theory of radiation though no more of interest in explaining self interaction of an electron, can be very useful in today's research in small scale optical systems. The significance of the WF absorber is the use of time-symmetrical solution of Maxwell's equations as opposed to only the retarded solution. The radiative coupling of emitters to nano wires in the near field and change in their lifetimes due to small mode volume enclosures have been elucidated with the retarded solutions before. These solutions have also been shown to agree with quantum electrodynamics, thus allowing for classical electromagnetic approaches in such problems. It is here assumed that the radiative coupling of the emitter with a body is in proportion to its contribution to the classical force of radiative reaction as derived in the WF absorber theory. Representing such nano structures as a partial WF absorber acting on the emitter makes the computations considerably easier than conventional electromagnetic solutions for full boundary conditions.

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