Abstract Submitted
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Charged Scalar Self-Mass during Inflation EMRE KAHYA, University of Florida — I present a computation of the one loop self-mass of a charged, massless and minimally coupled scalar in a locally de Sitter background. This model is of great physical interest because a previous computation of the one loop vacuum polarization shows that super-horizon photons behave, in some ways, as though they had nonzero mass. The present computation was made to determine if the scalar acquires a large enough mass quickly enough to quench the inflationary particle production which is responsible for the vacuum polarization. The computation was made in two different gauges: a simple one which takes account of the photon's conformal invariance in four dimensions and the de Sitter invariant gauge of Allen and Jacobson. In each case dimensional regularization was used and fully renormalized results were obtained. By simply ignoring some terms I also obtain the self-mass of a conformally coupled scalar.

Paul Avery
University of Florida

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