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Erratum

Erratum to: "Inflaton particles in reheating" [Phys. Lett. B 492 (2000) 331–338]

A.B. Henriques [a], R.G. Moorhouse [b]

[a] *Departamento de Fisica/CENTRA, Instituto Superior Tecnico, 1096 Lisbon, Portugal*
[b] *Department of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, UK*

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The figures shown were significantly incorrect because of coding error in the numerical solution of the equations. The conclusions that the long-wavelength curvature parameter ζ changes and that inflaton particles are important in reheating still hold, though the changes in ζ shown are different.

The resulting changes in discussion of the results are given below, followed by the correct figures.

Replace final paragraph of Section 3 by: In Fig. 1 we show the energy densities of φ_0 and φ_1; we see that in this model the energy density of φ_1 soon becomes comparable to that of φ_0 and finally somewhat exceeds it; it is only at the beginning of preheating that φ_1 can be treated as a perturbation of φ_0. Fig. 2 shows

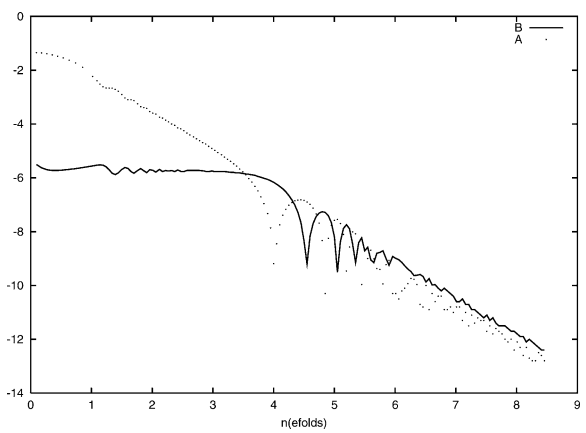

Fig. 1. Logarithmic plot of energy densities of φ_0 (A) and φ_1 (B) versus the number of e-folds of expansion in the reheat era. In all figures densities are in units $m^2 \times m^2_{\text{Planck}}$, where $m = 10^{-7} m_{\text{Planck}}$.

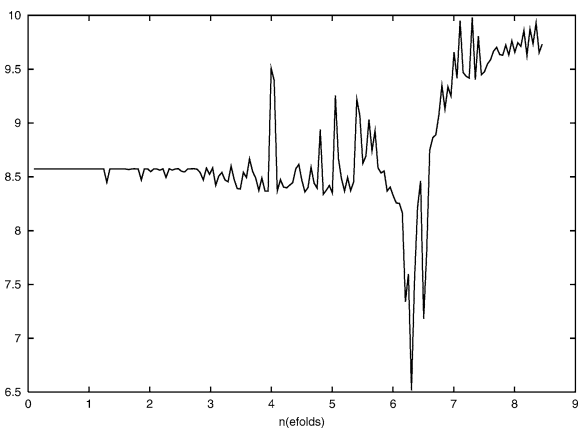

Fig. 2. Plot of $\lg(\zeta)$ versus the number of e-folds of expansion in the reheat era.

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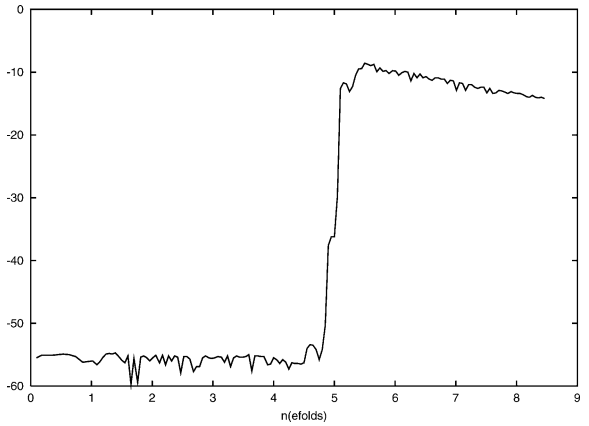

Fig. 3. Logarithmic plot of the energy density of χ versus the number of e-folds of expansion in the reheat era.

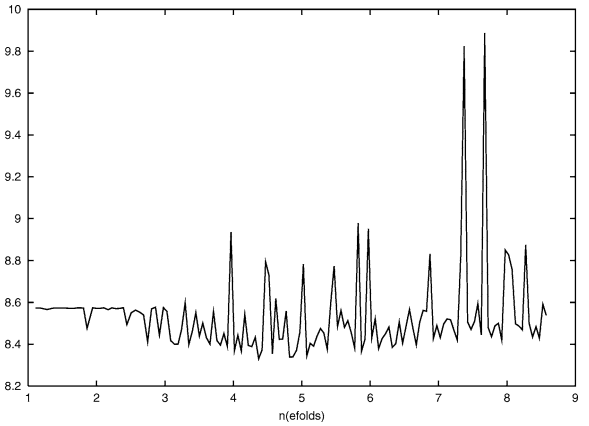

Fig. 4. Plot of $\lg(\zeta)$ when the χ field is switched off.

how ζ is initially constant, that is when φ_1 is much less than φ_0, but then develops strong fluctuations and later increases. Fig. 3 shows ζ developing resonance at 5 efolds after the end of the inflation era but we note that ζ, as shown in Fig. 2, has begun to fluctuate strongly while χ is still negligible thus showing the influence of quadratic terms in φ. And in Fig. 4 we give the ζ that results when we have eliminated χ from the equations, again showing the influence of φ_1 and φ_0 quadratic terms in the fluctuations of ζ.

Replace second paragraph of Section 4 by: In our results as φ_0 decreases, the energy density of the φ_1 field comes to somewhat exceed (by a factor of the order of 10) that of the φ_0 and also somewhat exceeds that of the resonating and much grown χ particle field. Even while this latter feature could be to an extent parameter dependent we consider a first order perturbative treatment of φ_1 to be inappropriate.