**Commentary**
Volume 9:2, 2021

Journal of Astrophysics & Aerospace Technology

ISSN: 2329-6542 Open Access

# The Power Spectrum for Disturbances in an Inflationary Model

**Abdul Gaffar***

*Department of Astrophysics, Akwa Ibom State University, Ikot Akpaden, Nigeria*

## About the Study

Our work uses the cosmic perturbation theory of the inflationary universe. It is clear that the Schrodinger picture is used in the formulation because the disturbance of such a model is due to the primitive quantum fluctuations. Such instructions are used for flat cases. For the initial state of these quantum fluctuations, we make the standard assumption that they are in an adiabatic vacuum state. This is an assumption that can ultimately be justified by a basic principle such as the Weil curvature hypothesis.

For the curvature parameter K=1, we derive the power spectrum of the primitive quantum fluctuations in the inflationary universe. This is achieved by the Born-Oppenheimer approximation scheme from the Wheeler-DeWitt equation for canonical quantum gravity using gauge invariants. Compared to the flat model, the closed model has a large performance deficiency. Observations seem to indicate that our universe is spatially flat. For this reason, the Friedman model primarily uses the flat case K=0 in the present and early universes. Of course, this does not mean that our universe is exactly spatially flat. This means that the potential curvature term appears to be independent of the available classes of observations. Nevertheless, the correct interpretation of the data is currently being debated and signs of support for a spatially closed universe have been found. See for example. This is one of the reasons for calculating the power spectrum of the spherical (K=1) model here. The closed model can explain the observed low amplitudes of quadrupole and octupole modes, which are not explained in the standard model of cosmology.

Our work uses the cosmic perturbation theory of the inflationary universe. It is clear that the Schrodinger picture is used in the formulation because the disturbance of such a model is due to the primitive quantum fluctuations. Such instructions are used for flat cases. For the initial state of these quantum fluctuations, we make the standard assumption that they are in an adiabatic vacuum state. This is an assumption that can ultimately be justified by a basic principle such as the Weil curvature hypothesis. Extension to the excited state is easy.

The question of whether our universe is open or closed is one of the most important unanswered questions in cosmology. Observations suggest that it is spatially flat, but this is not without controversy. There is also compelling conceptual and mathematical arguments that suggest that space cannot be infinitely large. From these points, we have newly examined the closed universe and started to calculate the power spectrum of the scalar mode of the low-speed inflation model from a basic point of view. This means that we started with the theory of quantum gravity and derived the power spectrum of the wave function using the Born-Oppenheimer scheme. We've used gauge invariants throughout. The angular power spectrum can only be calculated with advanced numerical techniques beyond the scope of this task. The closed model can be used to explain the large-scale observed energy shortages.

Our form is suitable for calculating the actual quantum gravity effect. This can be achieved by advancing a higher order Born-Oppenheimer approximation with the inverse square of Planck mass. For flat, the power spectrum was calculated. So far, these terms are too small to be observed, but they represent concrete predictions from a concrete approach to quantum gravity and may be relevant for future applications. Calculations for such terms in the closed model are reserved for future research.

**How to cite this article:** Gaffar, Abdul. "The Power Spectrum for Disturbances in an Inflationary Model." *J Astrophys Aerospace Technol* 9 (2021) : 174.

***Address for Correspondence:** Abdul Gaffar, Department of Astrophysics, Akwa Ibom State University, Ikot Akpaden, Nigeria, Tel: +251931883800; E-mail: gaffarabbu@gmail.com*



**Received**: September 02, 2021; **Accepted**: September 16, 2021; **Published**: September 23, 2021