



Sunspot Cycle Simulation Using a Narrowband Gaussian Process (Classic Reprint) (Paperback)

By James Allen Barnes

Forgotten Books, 2017. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****. Excerpt from Sunspot Cycle Simulation Using a Narrowband Gaussian Process Since the discovery of the cyclic behavior of sunspots by Schwabe in 1843, many authors have referred to the sunspot record as an example of naturally occurring periodic behavior not easily explained by the dynamics of rotating systems. Yule [1] characterized the sunspot numbers as a disturbed harmonic function, which he likened to the motion of a pendulum that boys are pelting with peas. Time series analysis texts [2] and statistical works [3] commonly cite the sunspot number series as a function that is more or less periodic. The noisy, but nearly periodic, character of the sunspot record suggests a very simple model of solar activity that simulates the observed Sunspot numbers to a surprising degree. The observed annual mean sunspot numbers [4] and simulated annual mean sunspot numbers (produced using methods described in this paper) are shown in figure 1. Our model, in its simplest form, is the squared output of a narrowband filter driven by white Gaussian noise. If elaborate filtering schemes are used, it is possible to mimic the stochastic...



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