Jay Feldman

When I did not include the 2031.5 value, my A was 1.06 and my B was 1.47, and my X^2 value was 12.87. My probability for these values was 45.74%.

When I include the 2031.5 value, my A was 1, my B was 2, and my X^2 was 20.5. My probability for these values was was 11.5%

The differences are because the value at 2031.5 is extremely high, 5.4, while according to the model you would expect to see ~B. Looking like it is included makes the fit seem even better than it actually is, because there is a better likelihood when it is not included.

When I compare to the null hypothesis, I get a chi-squared value of 3.167 and a percent of 99.87%. This is including the 2031.5 value. Without that value, I get a chi-squared value of 2.518 and a percent of 99.92.

They claim a confidence level of 99.8%, which is consistent with what I got.

Note: This use of Chi-Squared is technically speaking not valid. The Chi-Squared Goodness of fit tests can only be used if a category has more than 5 data points in it, and this does not hold for any bins but the first one, which we are excluding anyway.

OPTIONAL PART:

The parameters that best fit the data is A=19.25, and Phase shift=5.39. But, this had a X^2 value of 447.44, which was too high to even calculate a percent. I am not sure if this is due to a mistake in my code or in the data, but if my code is correct then this is not evidence for a sinusoidal curve. But, there is definitely evidence that there’s something there, as when I compared it to the null hypothesis of noise, I got a X^2 of 986.95.

I cannot find what the percent is, because it is too high for the ENTIGA function to calculate. I ran a DO loop for X^2 values of 1 to 500, and with DF of 35, it because unable to calculate a percent at X^2=280.

Looking more closely at the code, I find that at one part in the ENTIGA function, are the lines:

J=INT((5.\*(3.+ABS(X)))/2.)

F=1./(J+DF-X)

21 J=J-1

F=((F\*X)+1.)/(J+DF)

IF(J.NE.0)GOTO 21

For high values of X, J starts high. F starts low, at X^2=499, F is 2.5\*10^-3. But, for the same X^2 and D.F.=35, J starts at 630. That means that the line F=((F\*X)+1.)/(J+DF) is run 630 times, which by the time J gets down to 55, F is too large for the computer to store in a REAL, and F becomes INFINITY. The final RETURN is proportional to F, so it returns INFINITY, which is read as NaN. The largest value of F returned around 3.8\*10^36, which means the limit is almost definitely 2^(e-127).