Data analysis Challenge written responses:

a) I built the model in python, defined as ‘power’ with the 4 free parameters. I built the PDFs of the 4 parameters by using the corner library. See DCcorner.png for that plot.

b) For the median and 16-84% confidence ranges, I also used the corner library. I will quote the values below for completion:

Median value and 16-84% confidence interval of A: 11.729585810583401 +0.7836676878054991 -0.7901589417375003

Median value and 16-84% confidence interval of P: 7.128768657203838 +0.14991232923523778 -0.14713851638509823

Median value and 16-84% confidence interval of phi: 0.45250142917246783 +0.11624603580598825 -0.1229893884105866

Median value and 16-84% confidence interval of C: 84.35530140280041 +0.5347480538249272 -0.5525550237729391

I plotted the data and the median model as well. See data_and_model.png

c) Minimum Chi^2 = 9.88
DoF = 22
Adopting the best model as the null hypothesis, I calculated Pnull as 1-CDF(Chi^2(min), 22 DoF)
Pnull = 98.7%

This suggests that the model fits the data very well. In fact, one can interpret this as fitting too well, as the Chi^2 << DoF.