Summary

This is a book, containing the results summarized from the Light curve simulated data from Alex, shown in figure(1). Here we have used 3 filters from the data. The original time delay and magnification in the data is found in the title of the plot. We tried with changing the node spacing in the recontruction process. So an array of node spacing prior range was chosen and for each of this value, the reconstruction was done and the results are compared, which can be seen in the table in next page. The posterior plots and the reconstructed images for each of this rows from the table are subsequently presented in the following pages in the same order as of the rows in the table's node-space values. Changing the upper range of the time delay maximum range, can however change the reconstruction and the fitting statistics. The upper range of this parameter which is called as 'dt_max'in the program, used in this run of the code, can be found in the naming nomenclature of the folder TD_60, meaning the uppper range of the time delay max is 60 day (the default lower limit is 0). The folder name also shows the number of parameter used which is $NP = 8$.

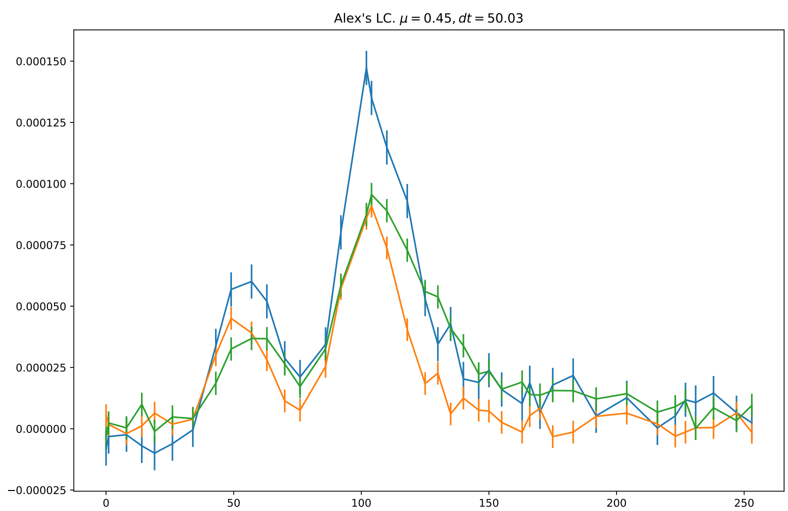
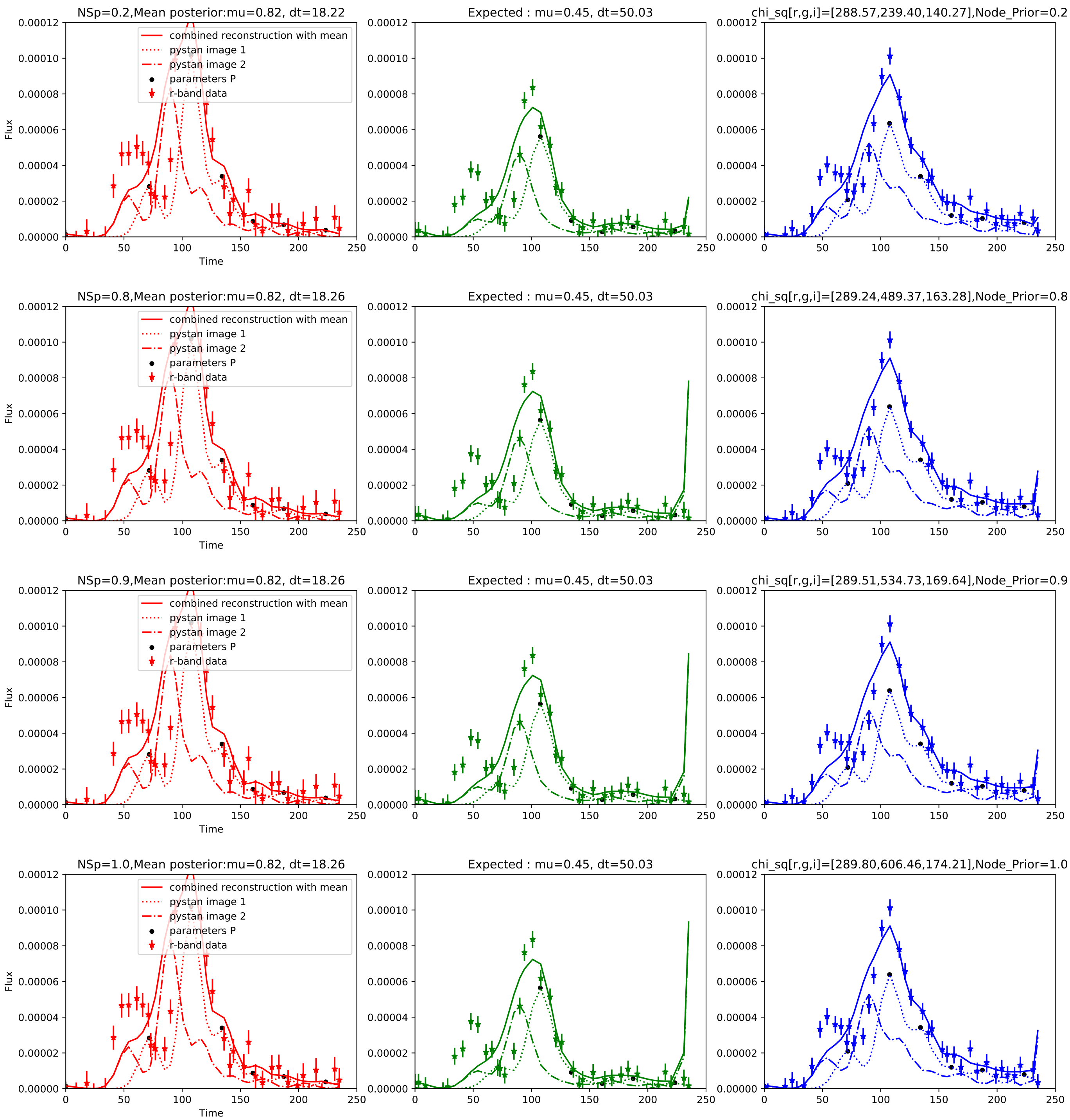
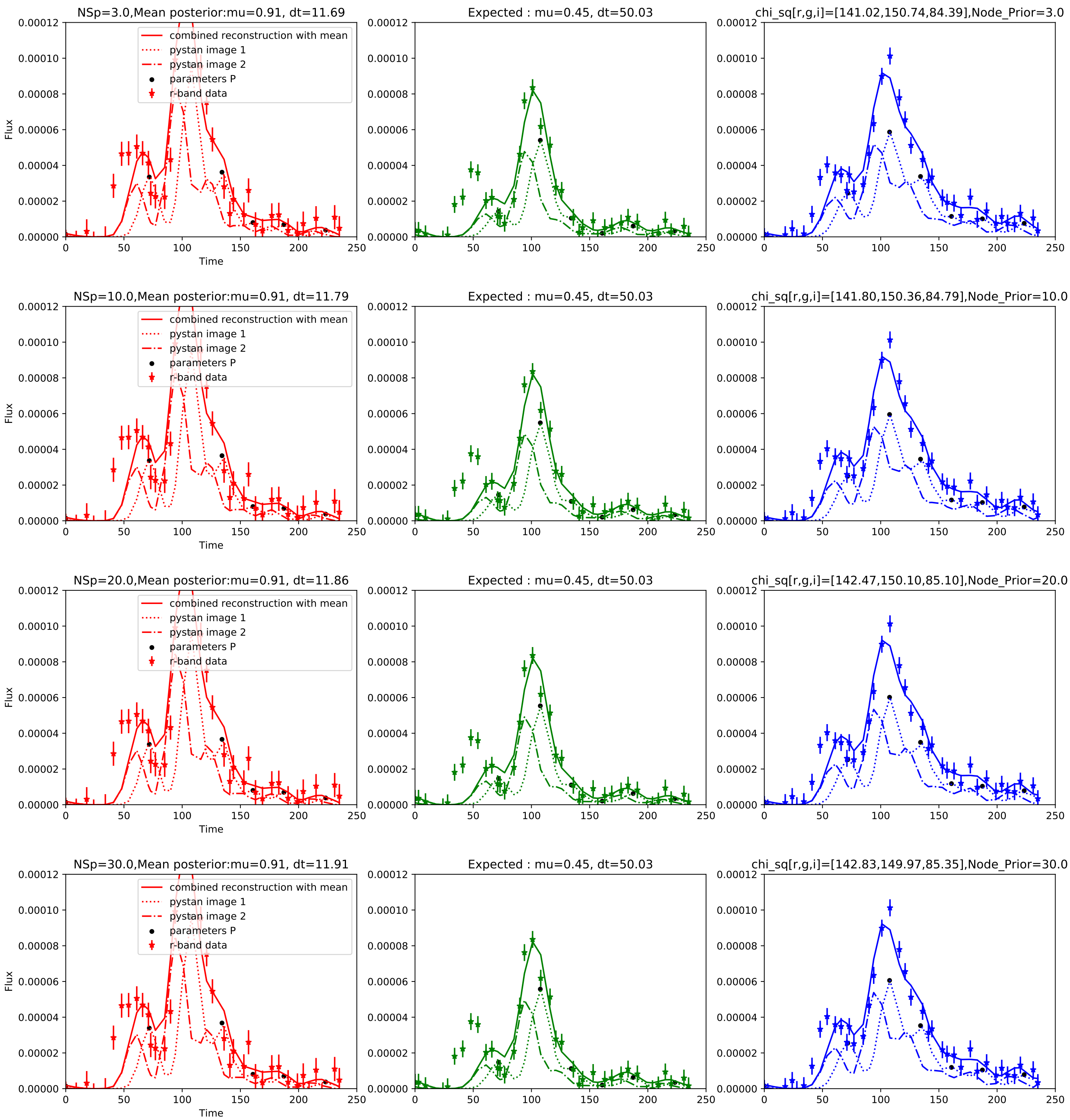


Figure 1: Alex's simulated light curve, customised to produce 2 images, with a time delay and magnification(ralative) shown in the top header of the plot. Here we used only 3 filter data, which are shown above.
X-axis = Time Delay in Days, Y-Axis = Flux.

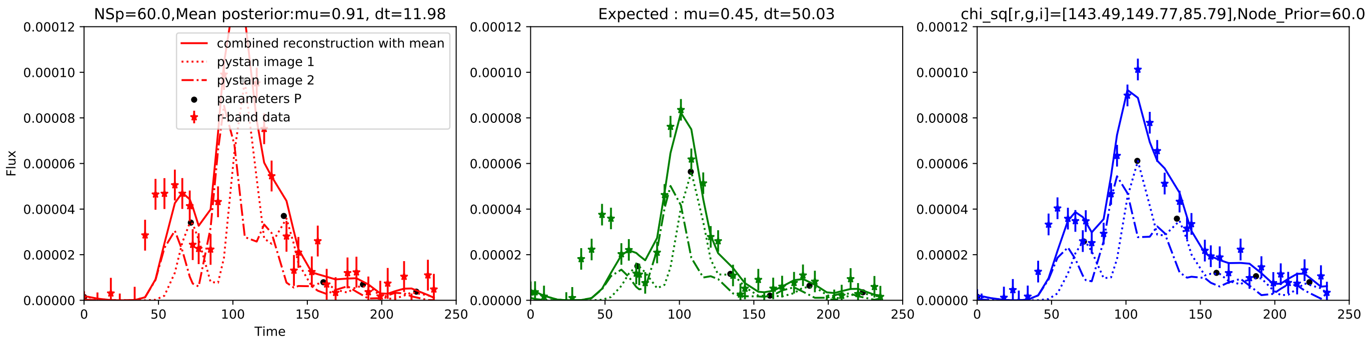
Table in the next page, showing the reconstruction statistics, **as a function of the node space parameter(1^{st} column)** for a given dt_max(which in this case is 60 for $NP = 8$ parameters.

nspace	mu_expec	dt_expec	mu_pos	dt_pos	chi_r	chi_g	chi_i
0.2	0.4477611940298508	50.0321	0.8245253419435598	18.223681986007346	288.5703701119929	239.40268011658407	140.27151109582712
0.8	0.4477611940298508	50.0321	0.8235851516214132	18.256537668300034	289.23567162826595	489.3727636178511	163.28420506537535
0.9	0.4477611940298508	50.0321	0.8245892824192173	18.258693464256382	289.5099338111027	534.7341415185653	169.64238824779147
1.0	0.4477611940298508	50.0321	0.8244332199966536	18.26205479581964	289.7990208305127	606.4569673632533	174.20738521427992
3.0	0.4477611940298508	50.0321	0.9059530436362037	11.687586266034588	141.01598085713667	150.74395771805763	84.38825407912816
10.0	0.4477611940298508	50.0321	0.9073503480109067	11.78517873128365	141.80296957703172	150.3588275068093	84.7932344356341
20.0	0.4477611940298508	50.0321	0.9073295227964199	11.86381250389514	142.47228800019258	150.0973978361659	85.09994952801915
30.0	0.4477611940298508	50.0321	0.9074590456720522	11.907131538537357	142.82888454463892	149.9653986984256	85.35013391816597
60.0	0.4477611940298508	50.0321	0.9081122717189056	11.981122249161956	143.48988231686909	149.7724450806177	85.78526473426511

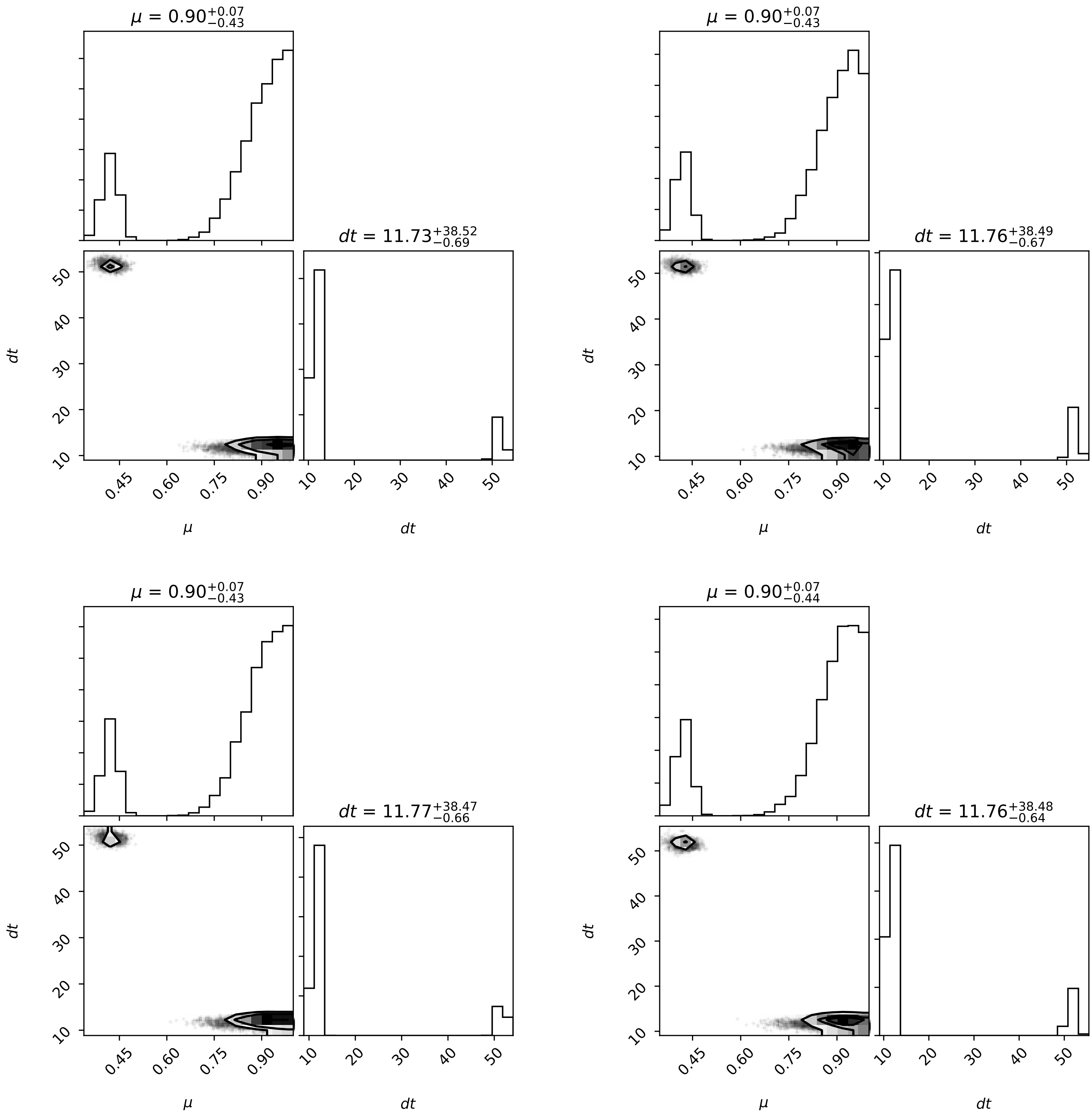

NSp=0.2,Mean posterior:mu=0.82, dt=18.22
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[288.57,239.40,140.27],Node_Prior=0.2
NSp=0.8,Mean posterior:mu=0.82, dt=18.26
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[289.24,489.37,163.28],Node_Prior=0.8
NSp=0.9,Mean posterior:mu=0.82, dt=18.26
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[289.51,534.73,169.64],Node_Prior=0.9
NSp=1.0,Mean posterior:mu=0.82, dt=18.26
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[289.80,606.46,174.21],Node_Prior=1.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time



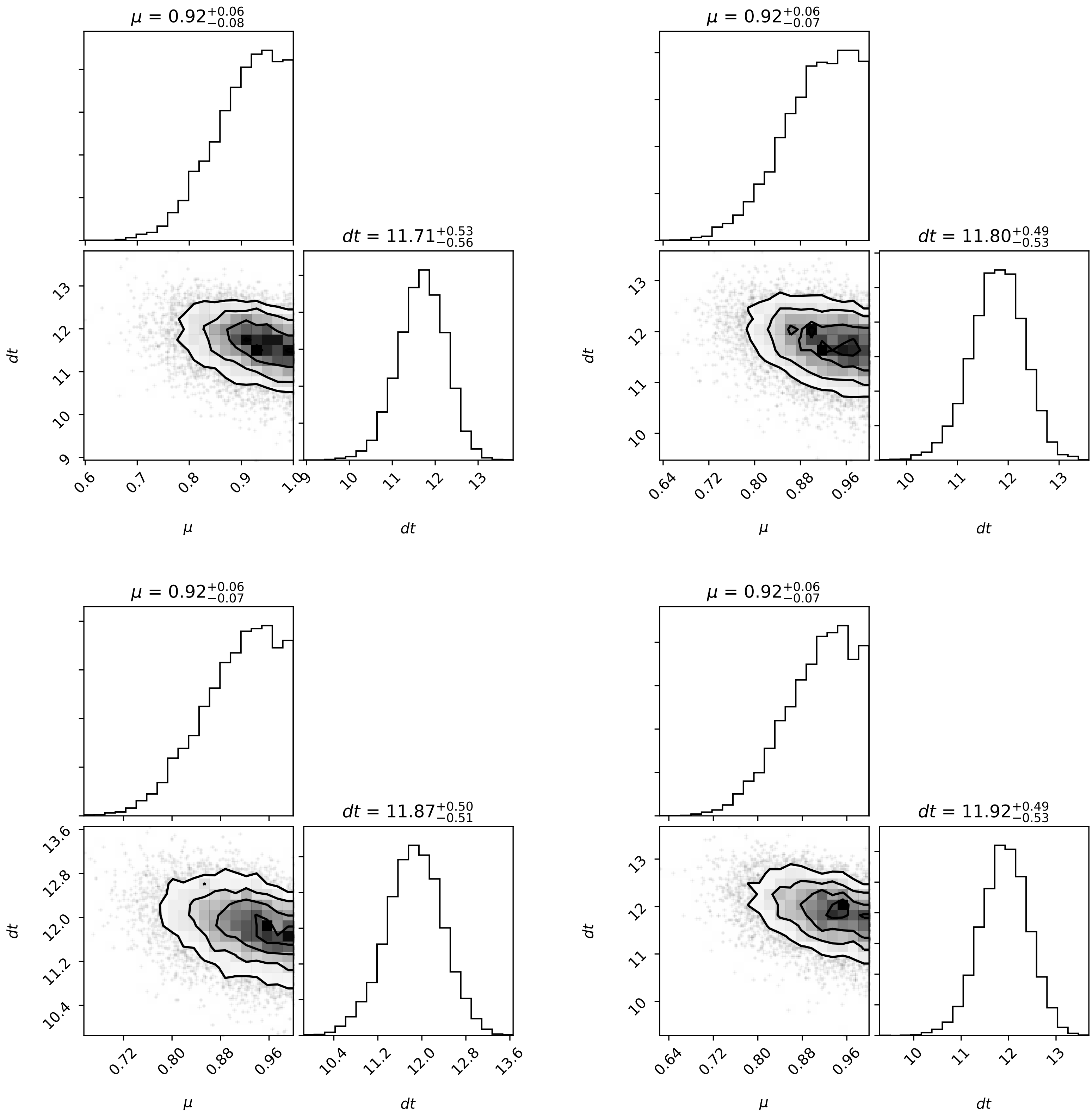
NSp=3.0,Mean posterior:mu=0.91, dt=11.69
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[141.02,150.74,84.39],Node_Prior=3.0
NSp=10.0,Mean posterior:mu=0.91, dt=11.79
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[141.80,150.36,84.79],Node_Prior=10.0
NSp=20.0,Mean posterior:mu=0.91, dt=11.86
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[142.47,150.10,85.10],Node_Prior=20.0
NSp=30.0,Mean posterior:mu=0.91, dt=11.91
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[142.83,149.97,85.35],Node_Prior=30.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time
0.00000
0.00002
0.00004
0.00006
0.00008
0.00010
0.00012
0
50
100
150
200
250



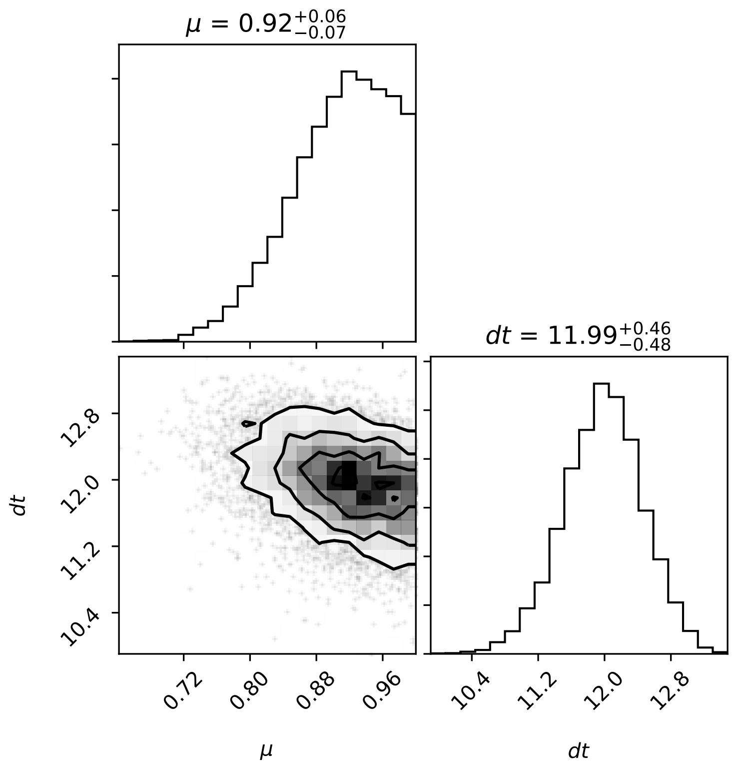
NSp=60.0,Mean posterior:mu=0.91, dt=11.98
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[143.49,149.77,85.79],Node_Prior=60.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time
0.00012
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
0
50
100
150
200
250



$\mu = 0.90^{+0.07}_{-0.43}$
$dt = 11.73^{+38.52}_{-0.69}$
$\mu = 0.90^{+0.07}_{-0.43}$
$dt = 11.76^{+38.49}_{-0.67}$
$\mu = 0.90^{+0.07}_{-0.43}$
$dt = 11.77^{+38.47}_{-0.66}$
$\mu = 0.90^{+0.07}_{-0.44}$
$dt = 11.76^{+38.48}_{-0.64}$
μ
dt



μ = $0.92^{+0.06}_{-0.08}$
dt = $11.71^{+0.53}_{-0.56}$
μ = $0.92^{+0.06}_{-0.07}$
dt = $11.80^{+0.49}_{-0.53}$
μ = $0.92^{+0.06}_{-0.07}$
dt = $11.87^{+0.50}_{-0.51}$
μ = $0.92^{+0.06}_{-0.07}$
dt = $11.92^{+0.49}_{-0.53}$
dt
μ



$\mu = 0.92^{+0.06}_{-0.07}$
$dt = 11.99^{+0.46}_{-0.48}$
12.8
12.0
11.2
10.4
dt
0.72
0.80
0.88
0.96
μ
10.4
11.2
12.0
12.8
dt