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_70, meaning the uppper range of the time delay max is 70 day (the default lower limit is 0). The folder name also shows the number of parameter used which is $NP = 8$.

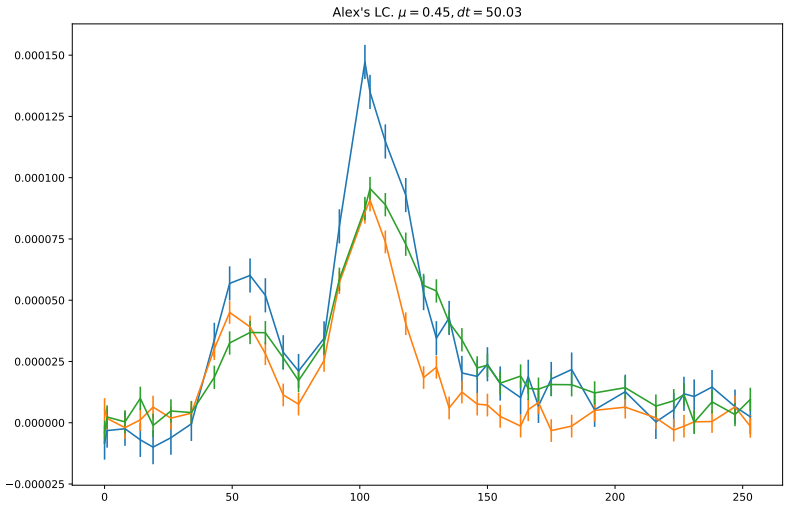
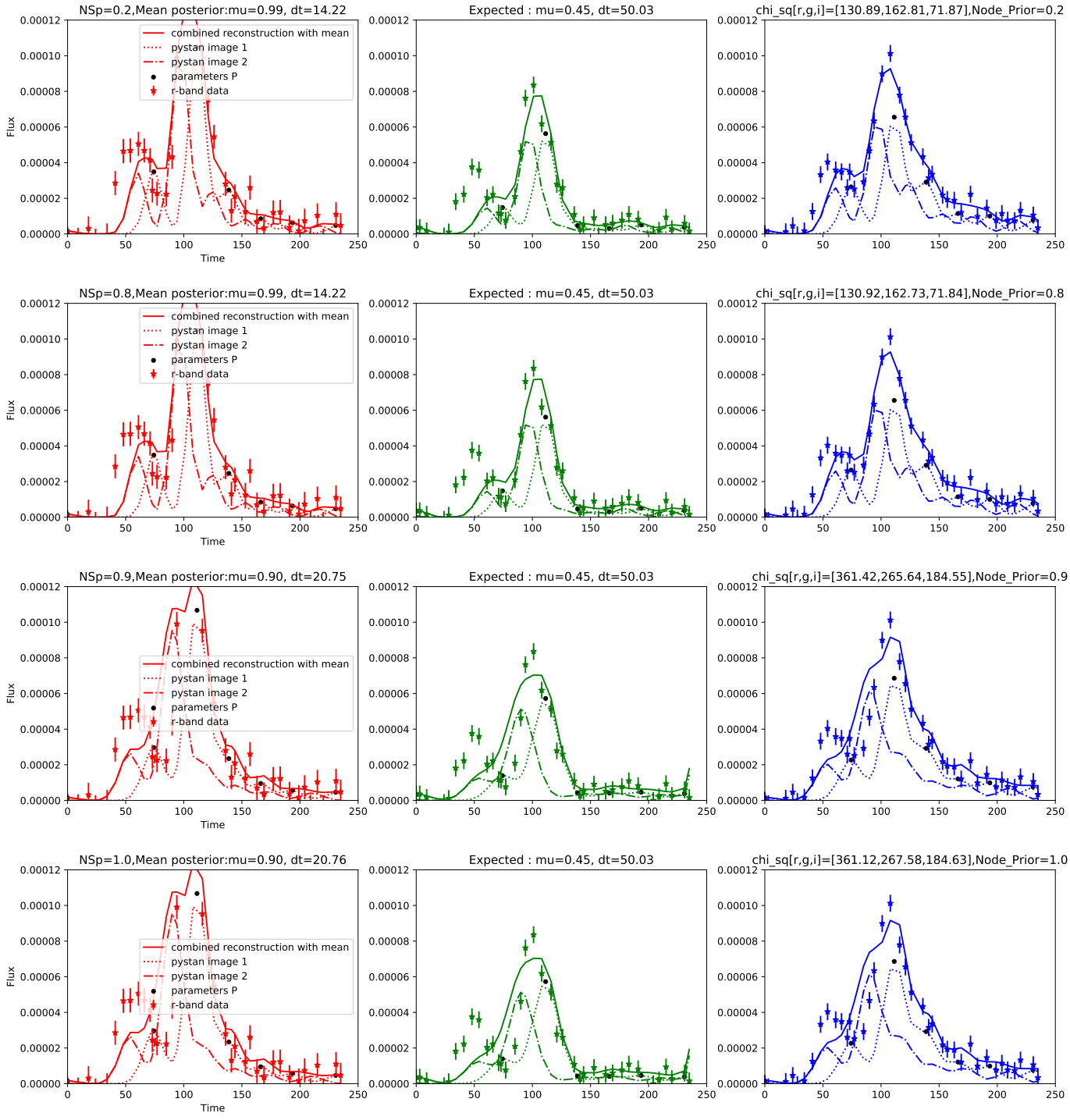
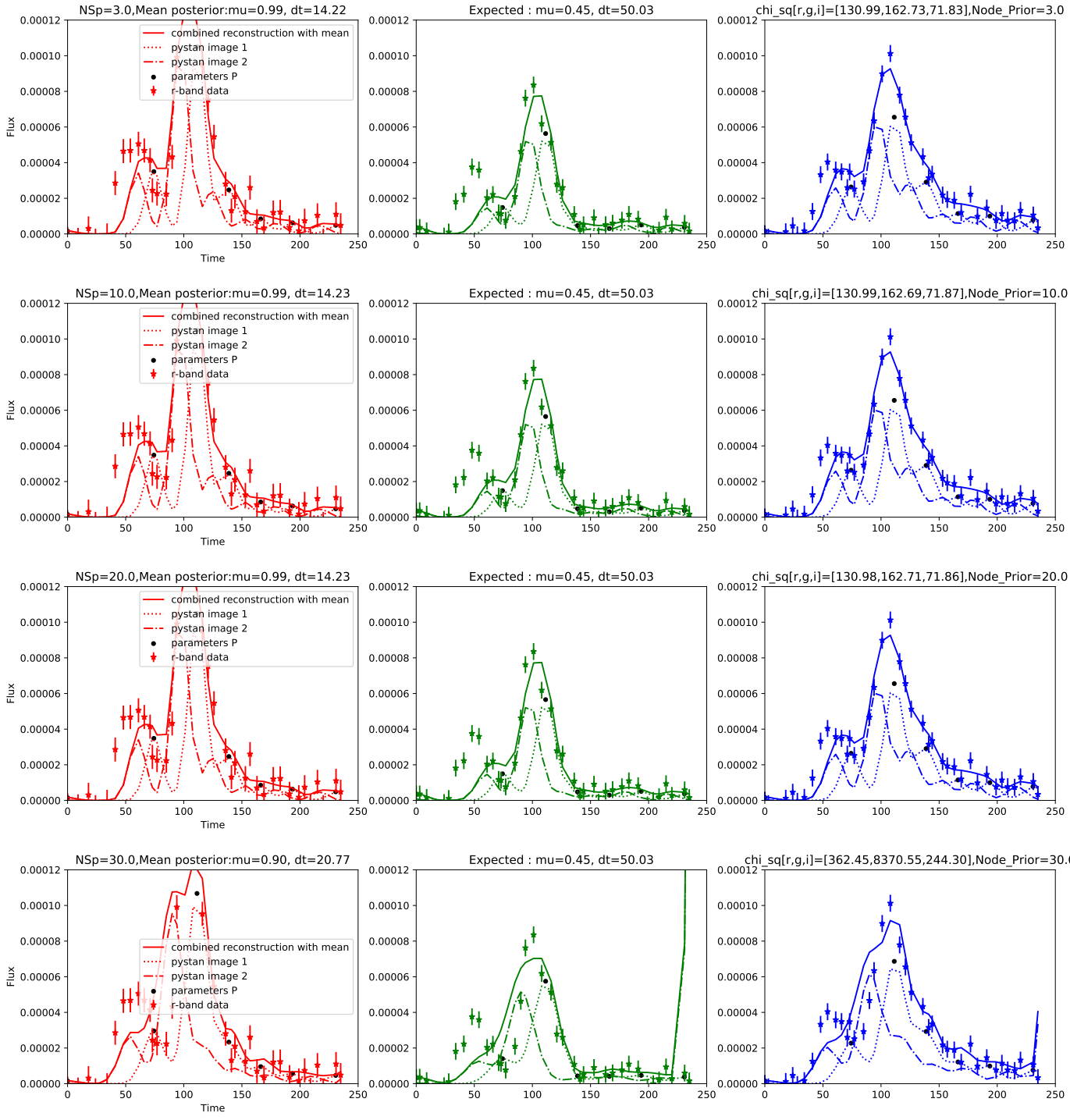


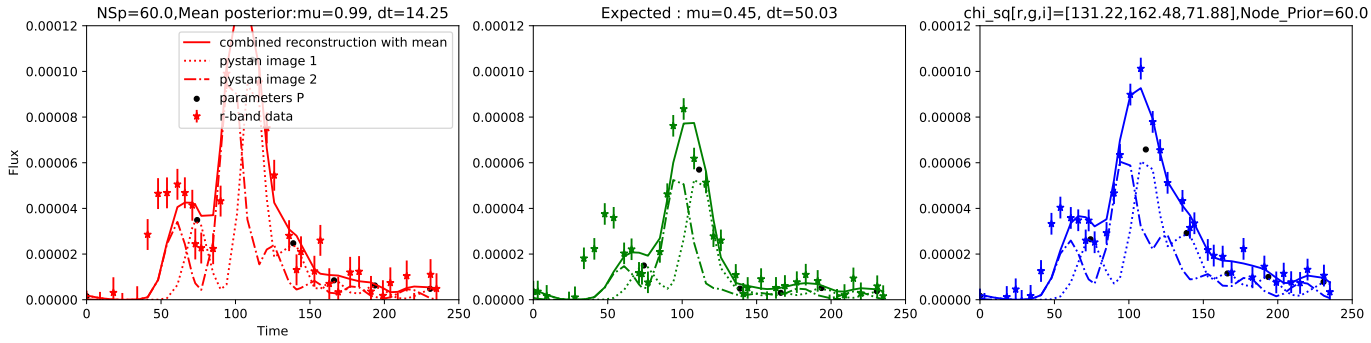
Figure 1: Alex's simulated light curve, customised to produce 2 images, with a time delay and magnification(ralative) shown in the top header of the plot. Here we used only 3 filter data, which are shown above.
X-axis = Time Delay in Days, Y-Axis = Flux.

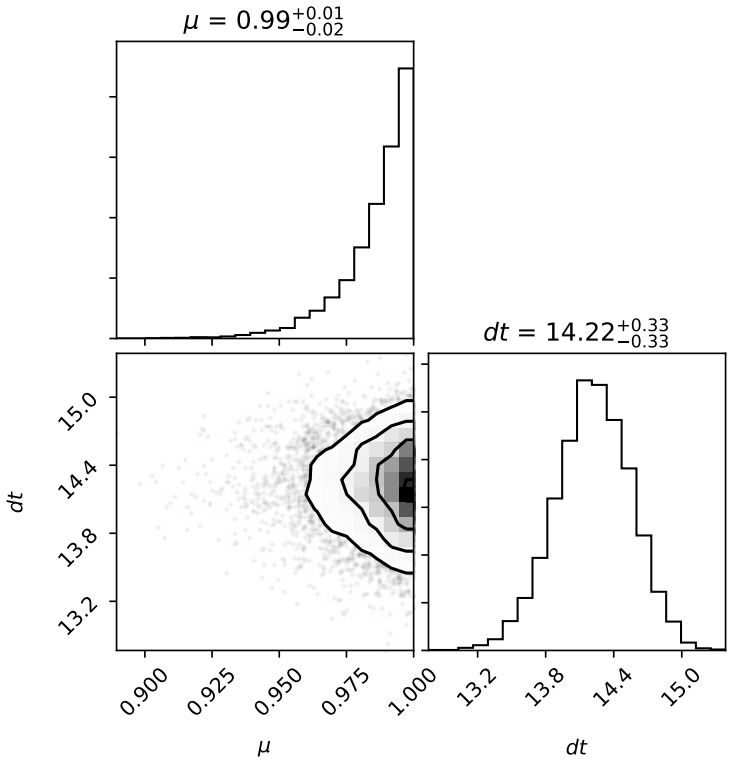
Table in the next page, showing the reconstruction statistics, **as a function of the node space parameter(1^{st} column)** for a given dt_max(which in this case is 70 for $NP = 8$ parameters.

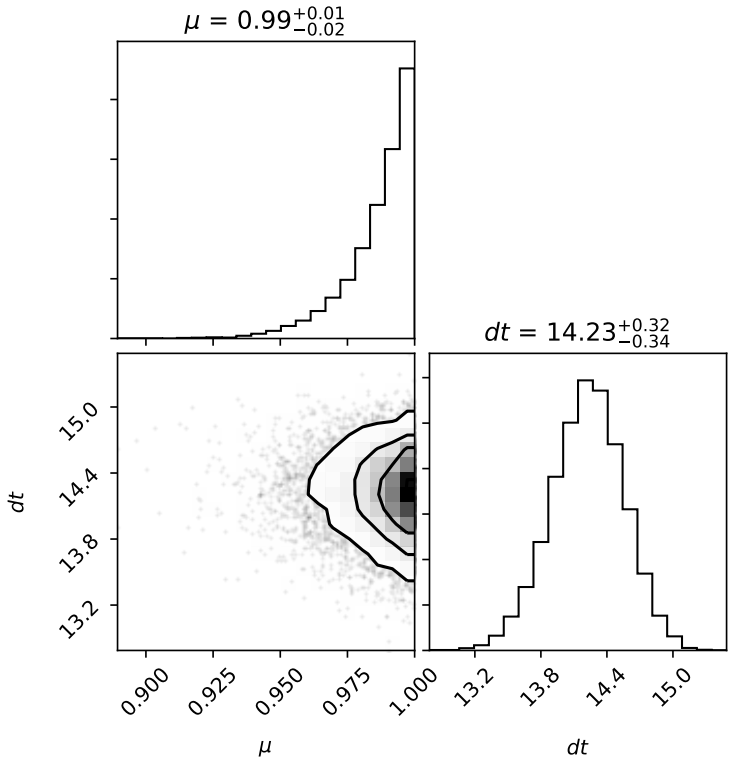
nspace	mu_expec	dt_expec	mu_pos	dt_pos	chi_r	chi_g	chi_i
0.2	0.4477611940298508	50.0321	0.9858094922175248	14.21851915787189	130.88954798263566	162.81280198276383	71.87356164913281
0.8	0.4477611940298508	50.0321	0.9860772180939653	14.222364639688129	130.92033080027943	162.72974877472365	71.84498781718554
0.9	0.4477611940298508	50.0321	0.8962452829886746	20.754128496886285	361.4206559056053	265.6417564941588	184.54848952913818
1.0	0.4477611940298508	50.0321	0.8962414506627354	20.75804153458781	361.11804453762073	267.5756318661243	184.6279620724355
3.0	0.4477611940298508	50.0321	0.985965639930226	14.224209969965457	130.9897441747106	162.73101917950873	71.82709303546511
10.0	0.4477611940298508	50.0321	0.986117105939717	14.227953858790903	130.99320719557906	162.6868535792174	71.87043769948608
20.0	0.4477611940298508	50.0321	0.9859992085316036	14.227603654863863	130.9824918233751	162.70721578637404	71.86165947415415
30.0	0.4477611940298508	50.0321	0.8965516110810855	20.77453361563766	362.45069017536457	8370.552401224477	244.3004168004798
60.0	0.4477611940298508	50.0321	0.9865125112483396	14.248115329189815	131.2214889924797	162.47781302095322	71.8804447734602

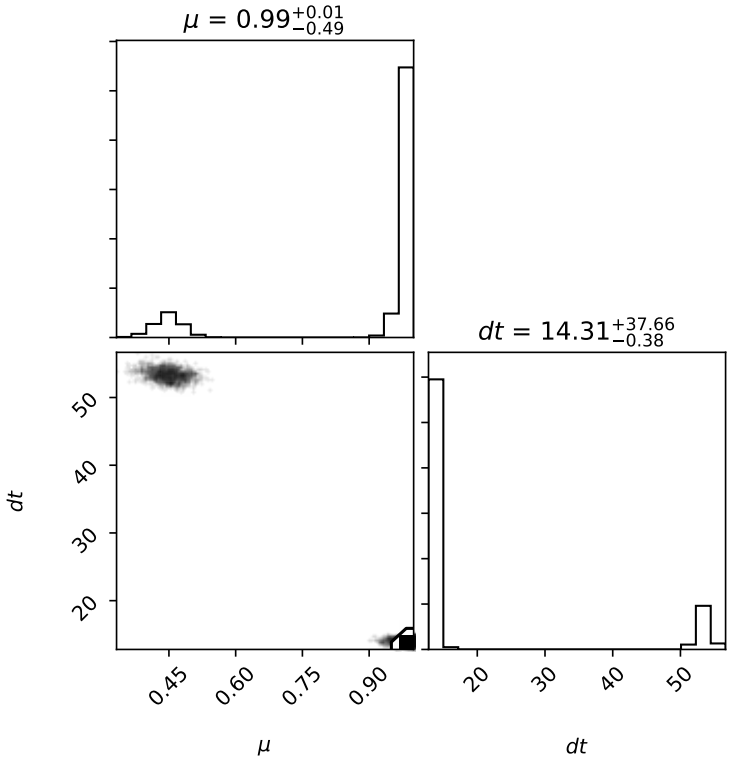

NSp=0.2,Mean posterior:mu=0.99, dt=14.22
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[130.89,162.81,71.87],Node_Prior=0.2
NSp=0.8,Mean posterior:mu=0.99, dt=14.22
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[130.92,162.73,71.84],Node_Prior=0.8
NSp=0.9,Mean posterior:mu=0.90, dt=20.75
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[361.42,265.64,184.55],Node_Prior=0.9
NSp=1.0,Mean posterior:mu=0.90, dt=20.76
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[361.12,267.58,184.63],Node_Prior=1.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time

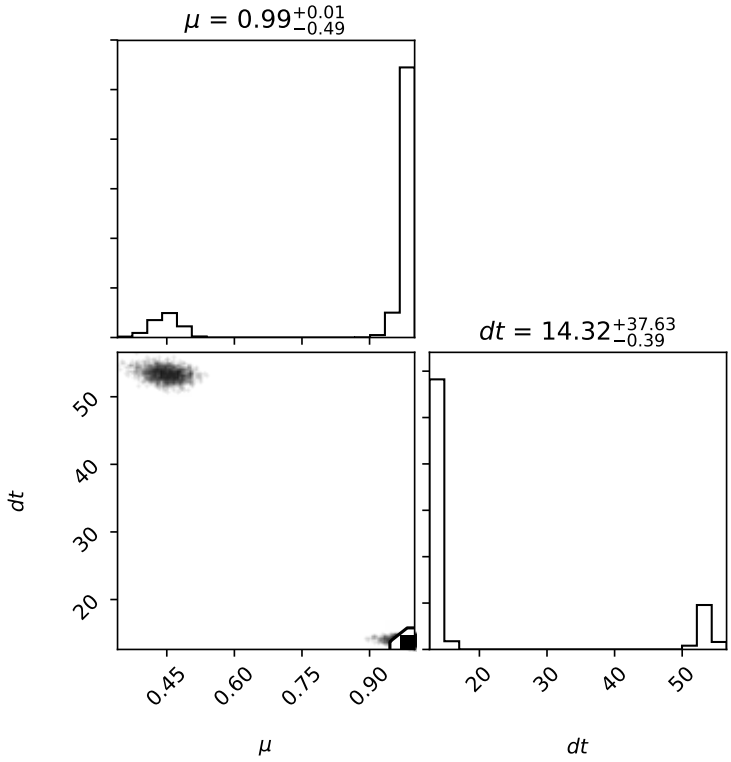

NSp=3.0,Mean posterior:mu=0.99, dt=14.22
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[130.99,162.73,71.83],Node_Prior=3.0
NSp=10.0,Mean posterior:mu=0.99, dt=14.23
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[130.99,162.69,71.87],Node_Prior=10.0
NSp=20.0,Mean posterior:mu=0.99, dt=14.23
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[130.98,162.71,71.86],Node_Prior=20.0
NSp=30.0,Mean posterior:mu=0.90, dt=20.77
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[362.45,8370.55,244.30],Node_Prior=30.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time

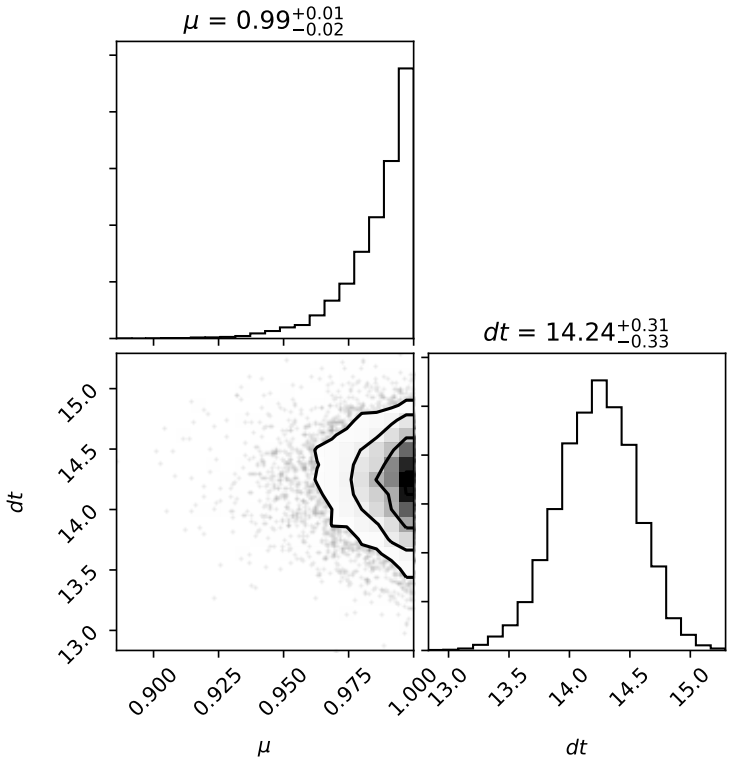

NSp=60.0,Mean posterior:mu=0.99, dt=14.25
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[131.22,162.48,71.88],Node_Prior=60.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time
0.00012
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
0
50
100
150
200
250

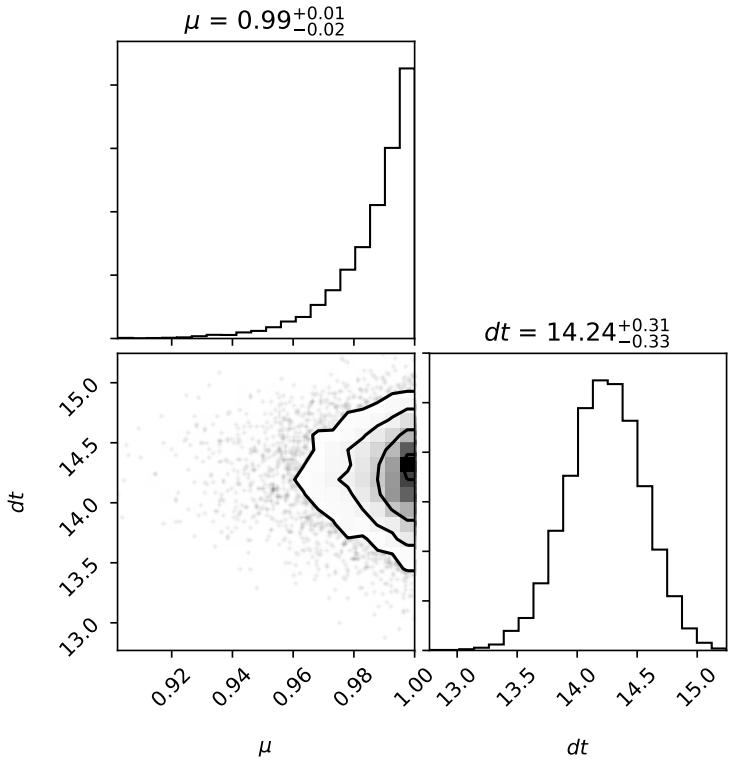

$\mu = 0.99^{+0.01}_{-0.02}$
$dt = 14.22^{+0.33}_{-0.33}$
dt
μ

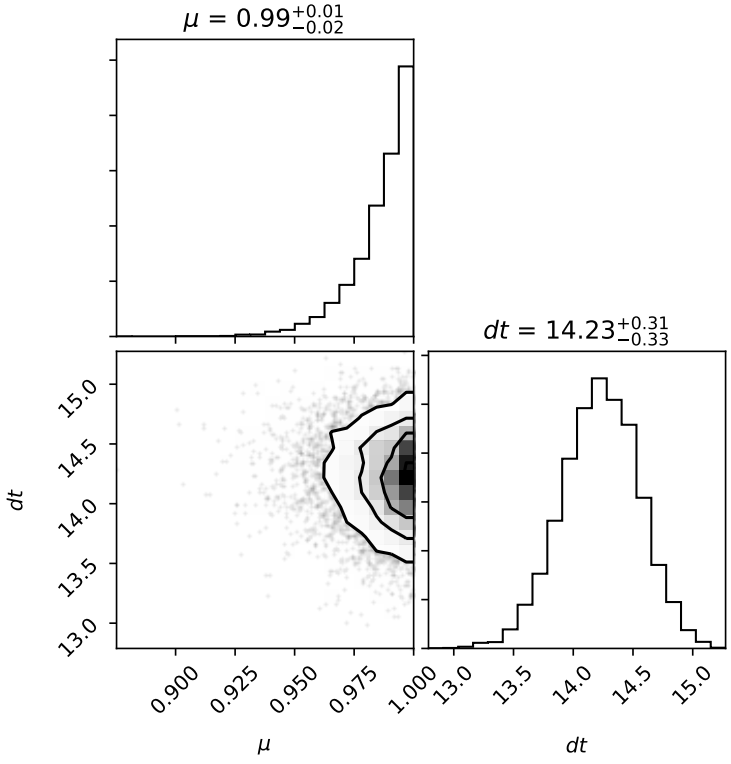

$\mu = 0.99^{+0.01}_{-0.02}$
$dt = 14.23^{+0.32}_{-0.34}$
dt
μ

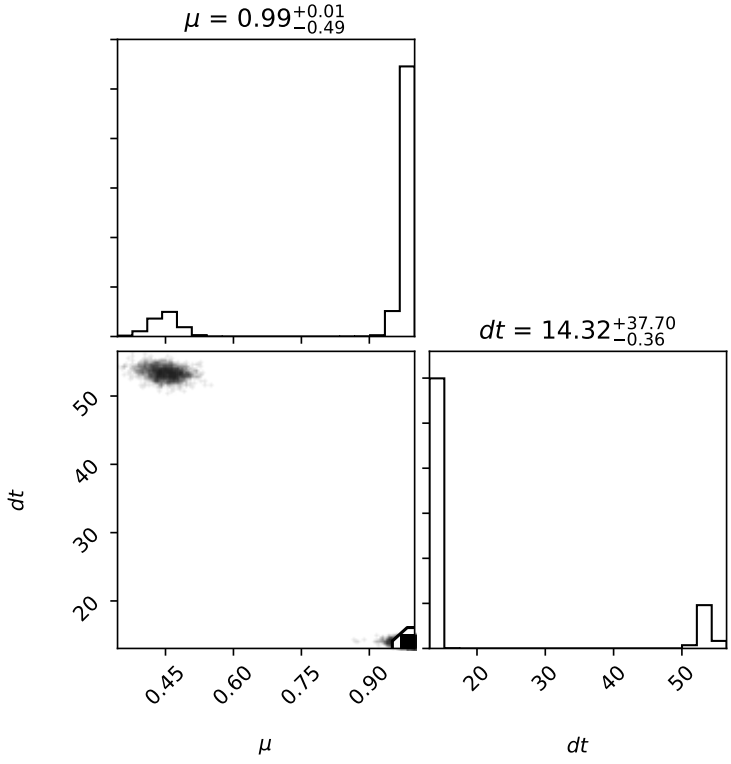

$\mu = 0.99^{+0.01}_{-0.49}$
$dt = 14.31^{+37.66}_{-0.38}$
dt
μ

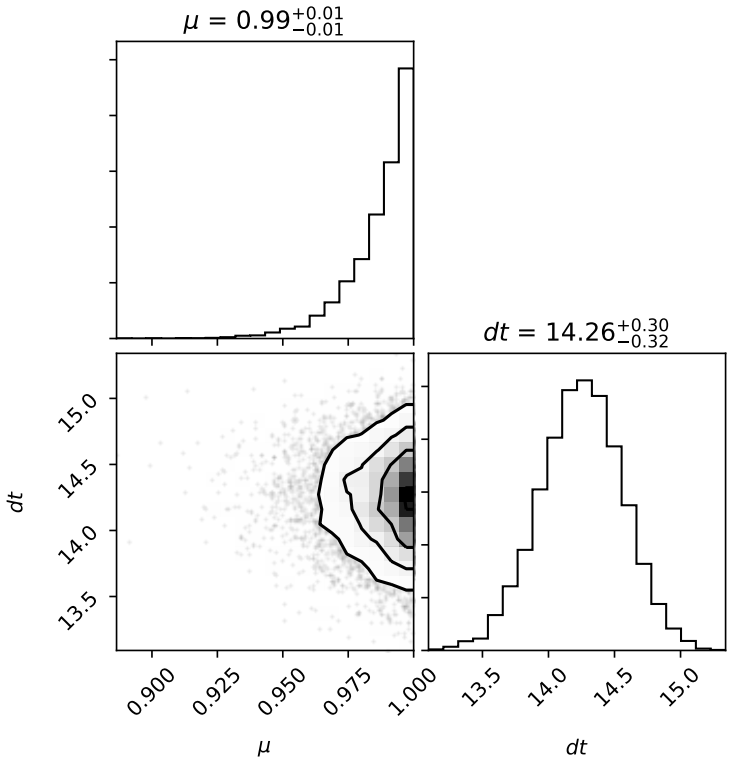

$\mu = 0.99^{+0.01}_{-0.49}$
$dt = 14.32^{+37.63}_{-0.39}$
dt
μ


$\mu = 0.99^{+0.01}_{-0.02}$
$dt = 14.24^{+0.31}_{-0.33}$
μ
dt


$\mu = 0.99^{+0.01}_{-0.02}$
$dt = 14.24^{+0.31}_{-0.33}$
μ
dt


$\mu = 0.99^{+0.01}_{-0.02}$
$dt = 14.23^{+0.31}_{-0.33}$
μ
dt


$\mu = 0.99^{+0.01}_{-0.49}$
$dt = 14.32^{+37.70}_{-0.36}$
μ
dt


$\mu = 0.99^{+0.01}_{-0.01}$
$dt = 14.26^{+0.30}_{-0.32}$
15.0
14.5
14.0
13.5
dt
0.900
0.925
0.950
0.975
1.000
μ
13.5
14.0
14.5
15.0
dt