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_100, meaning the uppper range of the time delay max is 100 day (the default lower limit is 0). The folder name also shows the number of parameter used which is $NP = 8$.

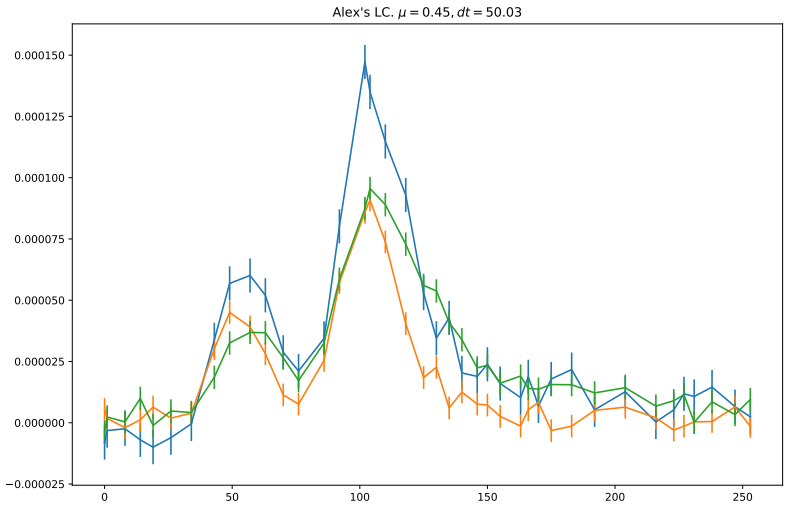
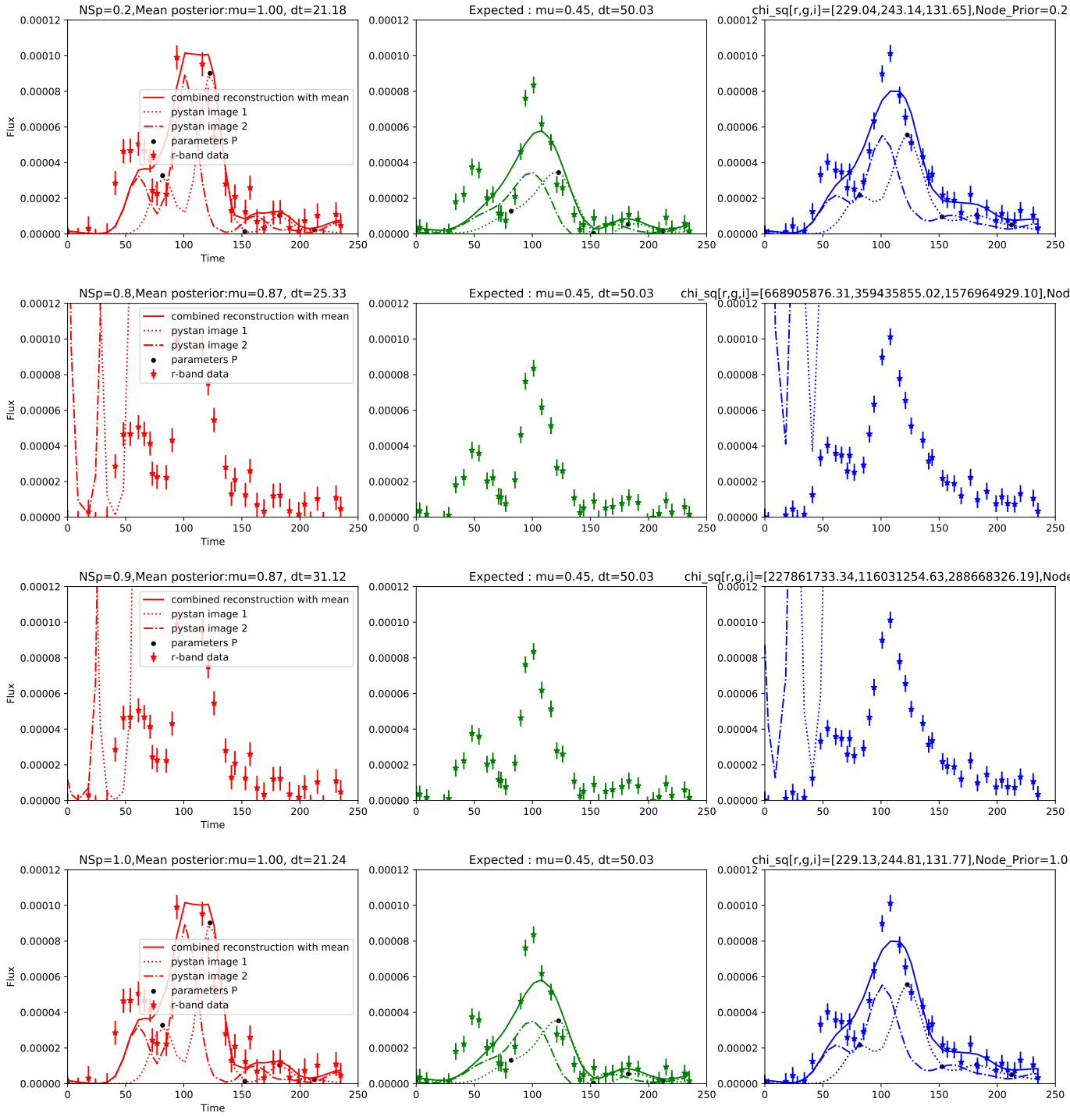
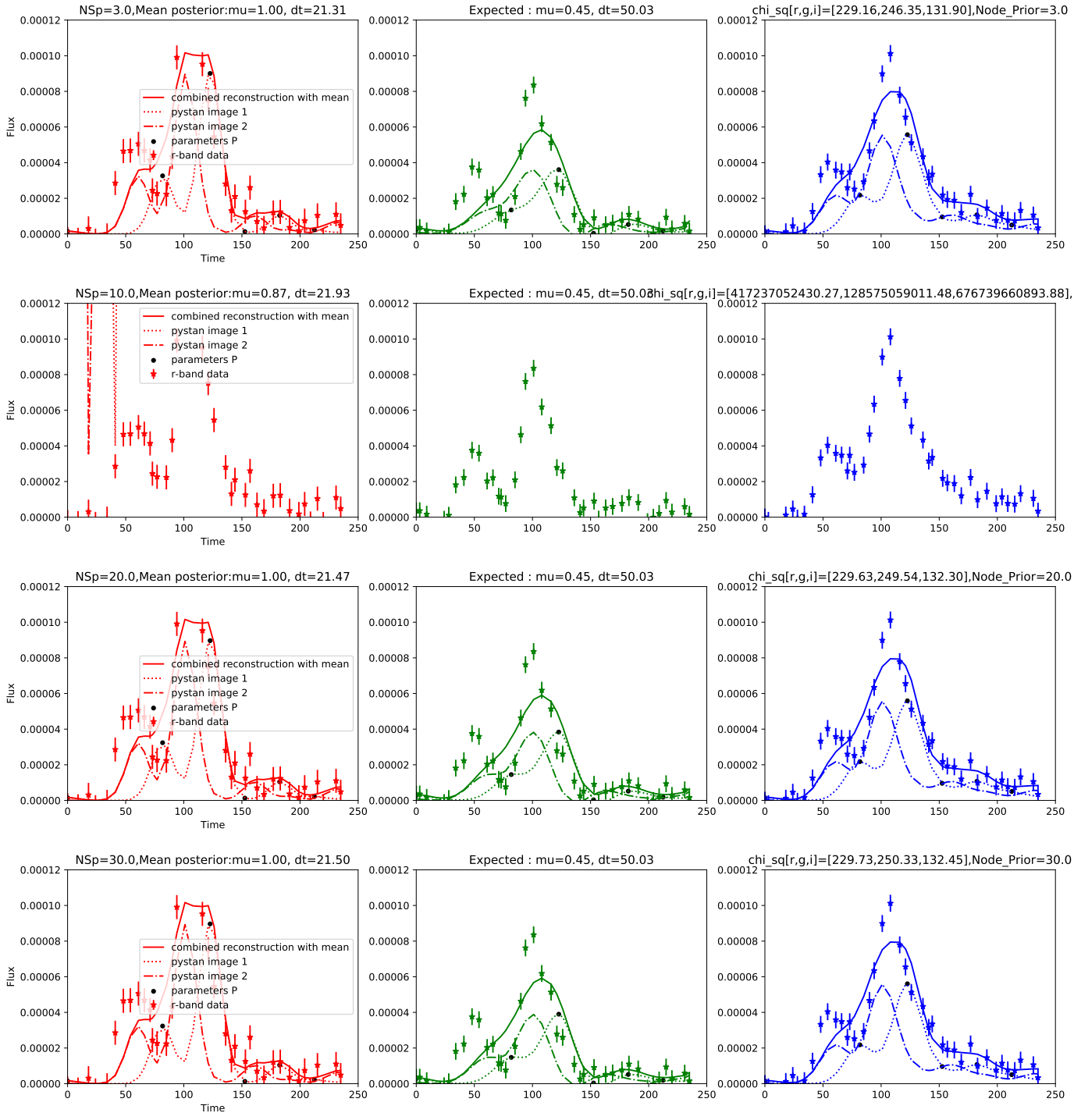


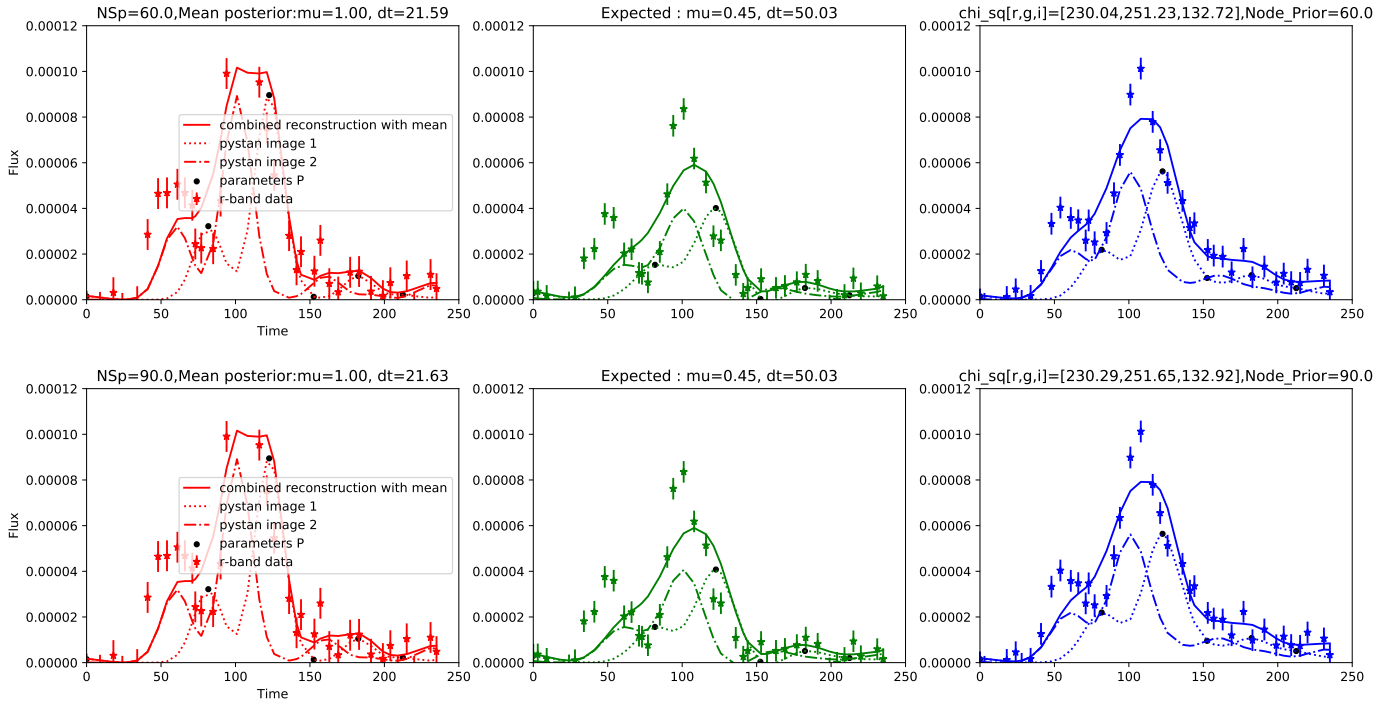
Figure 1: Alex's simulated light curve, customised to produce 2 images, with a time delay and magnification(ralative) shown in the top header of the plot. Here we used only 3 filter data, which are shown above.
X-axis = Time Delay in Days, Y-Axis = Flux.

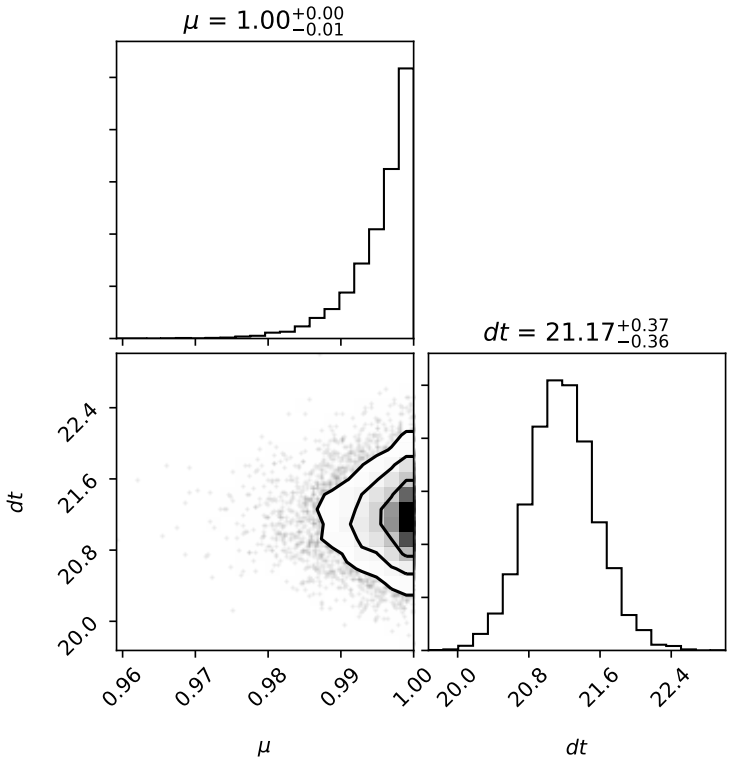
Table in the next page, showing the reconstruction statistics, **as a function of the node space parameter(1^{st} column)** for a given dt_max(which in this case is 100 for $NP = 8$ parameters.

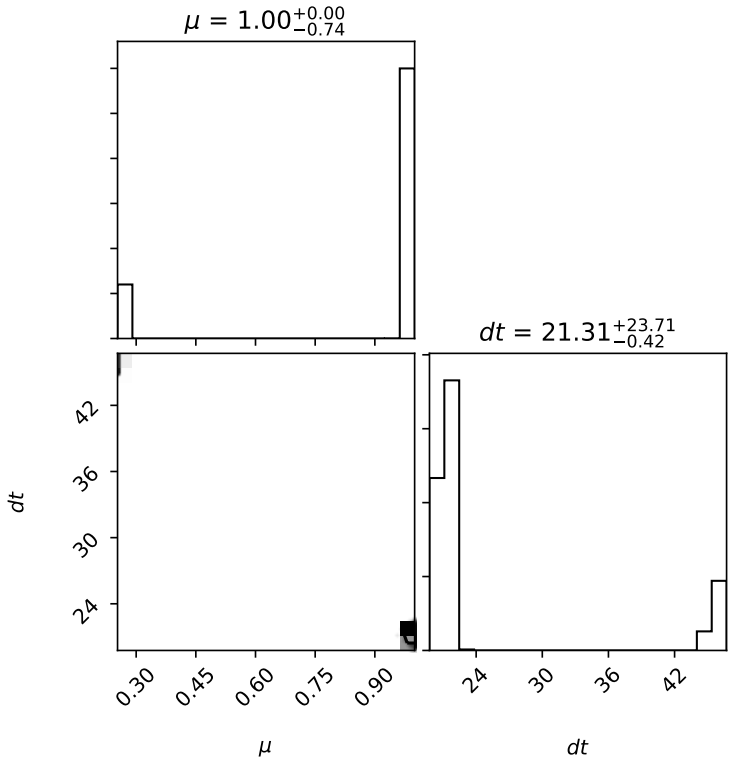
nspace	mu_expec	dt_expec	mu_pos	dt_pos	chi_r	chi_g	chi_i
0.2	0.4477611940298508	50.0321	0.9953881388645311	21.17526574768498	229.04025821031777	243.14084763632536	131.65477644978145
0.8	0.4477611940298508	50.0321	0.8717765086107448	25.33486781823866	668905876.3127857	359435855.02040553	1576964929.099831
0.9	0.4477611940298508	50.0321	0.8714369665175475	31.1224691530595	227861733.34383518	116031254.62564006	288668326.1911561
1.0	0.4477611940298508	50.0321	0.9954825384968294	21.241550440117923	229.12823898808202	244.81003761618473	131.76755087987007
3.0	0.4477611940298508	50.0321	0.9957351822411474	21.309438972693314	229.1609469971316	246.34837292103393	131.90274485464408
10.0	0.4477611940298508	50.0321	0.8735786410531353	21.93326315598752	417237052430.2672	128575059011.47987	676739660893.8823
20.0	0.4477611940298508	50.0321	0.9958450949085816	21.470807041689625	229.63462727683023	249.5398519808132	132.29969905223334
30.0	0.4477611940298508	50.0321	0.9957826240526629	21.503063745257467	229.73309515528308	250.33092403052774	132.44623732427814
60.0	0.4477611940298508	50.0321	0.9959687909048861	21.585617837907506	230.03833856284433	251.23309086113107	132.71947554883528
90.0	0.4477611940298508	50.0321	0.9959942402130144	21.62665272975957	230.28517562041318	251.6461296650543	132.91952822600413

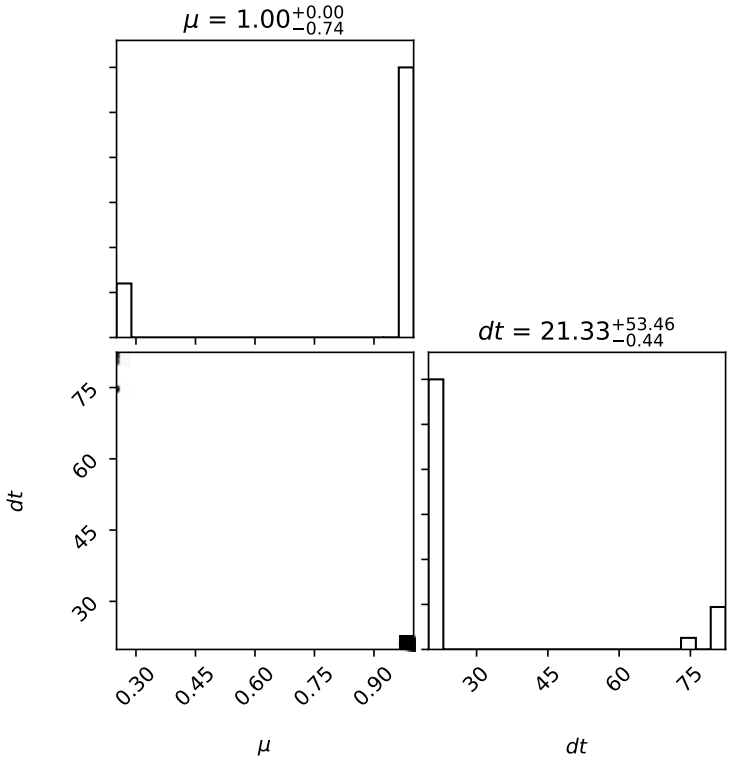

NSp=0.2,Mean posterior:mu=1.00, dt=21.18
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[229.04,243.14,131.65],Node_Prior=0.2
NSp=0.8,Mean posterior:mu=0.87, dt=25.33
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[668905876.31,359435855.02,1576964929.10],Node_Prior=0.8
NSp=0.9,Mean posterior:mu=0.87, dt=31.12
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[227861733.34,116031254.63,288668326.19],Node_Prior=0.9
NSp=1.0,Mean posterior:mu=1.00, dt=21.24
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[229.13,244.81,131.77],Node_Prior=1.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time

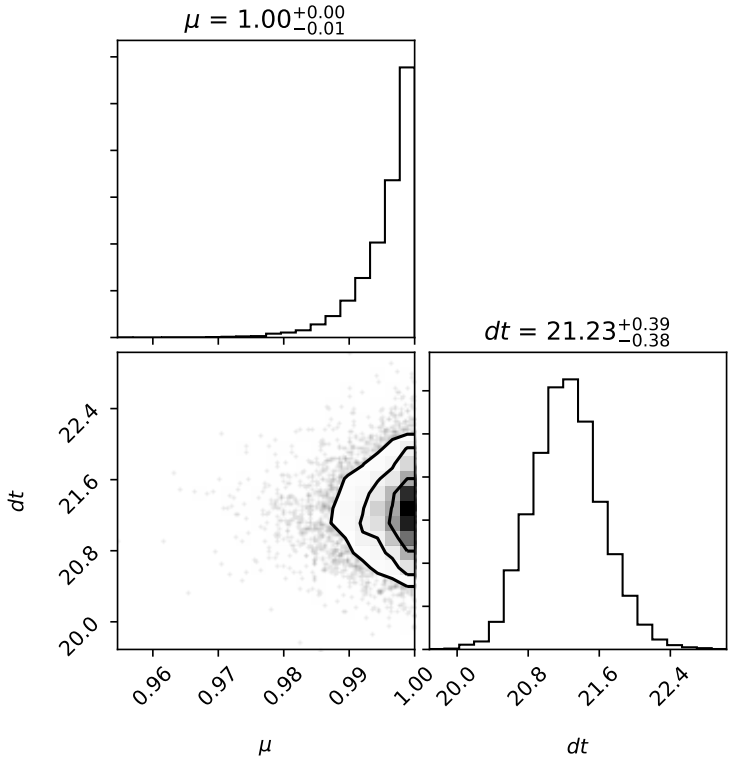

NSp=3.0,Mean posterior:mu=1.00, dt=21.31
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[229.16,246.35,131.90],Node_Prior=3.0
NSp=10.0,Mean posterior:mu=0.87, dt=21.93
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[417237052430.27,128575059011.48,676739660893.88],Node_Prior=10.0
NSp=20.0,Mean posterior:mu=1.00, dt=21.47
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[229.63,249.54,132.30],Node_Prior=20.0
NSp=30.0,Mean posterior:mu=1.00, dt=21.50
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[229.73,250.33,132.45],Node_Prior=30.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time

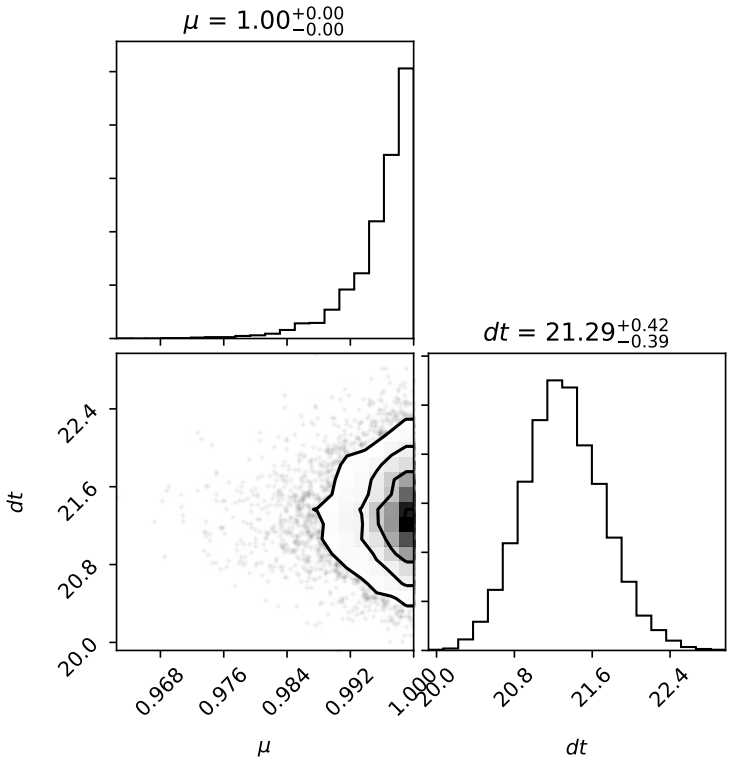

NSp=60.0,Mean posterior:mu=1.00, dt=21.59
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[230.04,251.23,132.72],Node_Prior=60.0
NSp=90.0,Mean posterior:mu=1.00, dt=21.63
Expected : mu=0.45, dt=50.03
chi_sq[r,g,i]=[230.29,251.65,132.92],Node_Prior=90.0
combined reconstruction with mean
pystan image 1
pystan image 2
parameters P
r-band data
Flux
Time

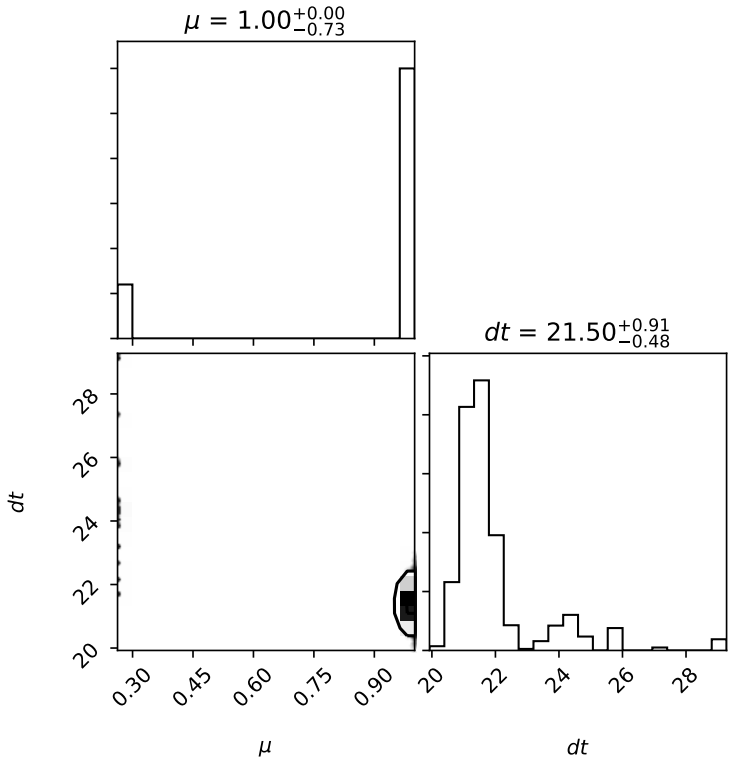

$\mu = 1.00^{+0.00}_{-0.01}$
$dt = 21.17^{+0.37}_{-0.36}$
dt
μ
dt

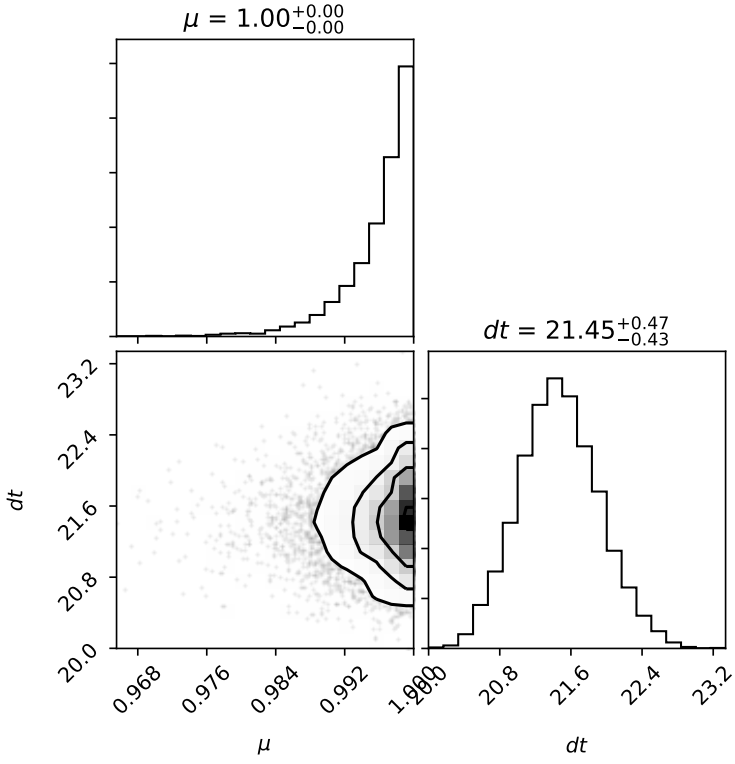

$\mu = 1.00^{+0.00}_{-0.74}$
$dt = 21.31^{+23.71}_{-0.42}$
dt
μ
dt

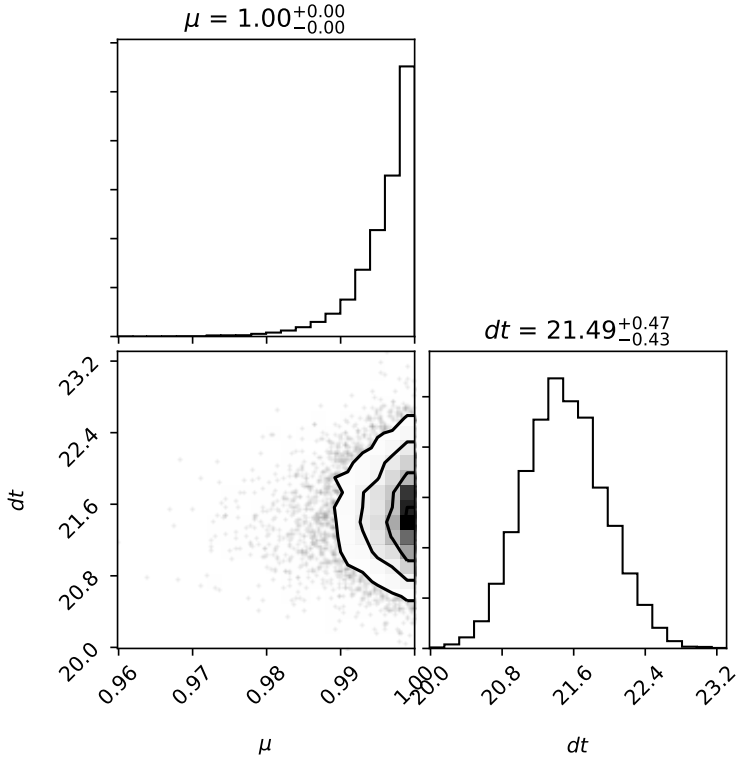

$\mu = 1.00^{+0.00}_{-0.74}$
$dt = 21.33^{+53.46}_{-0.44}$
dt
μ
dt

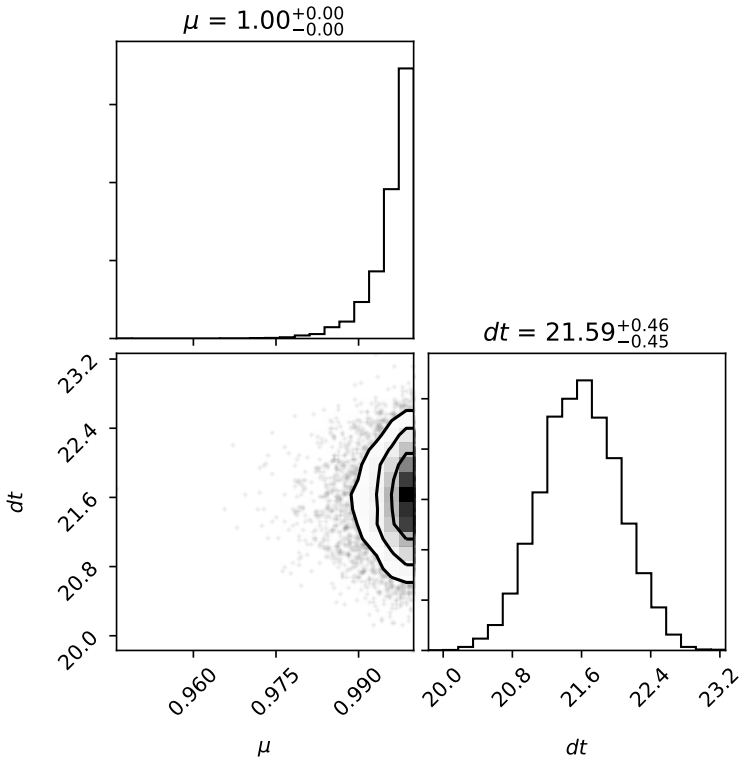

$\mu = 1.00^{+0.00}_{-0.01}$
$dt = 21.23^{+0.39}_{-0.38}$
dt
μ
dt

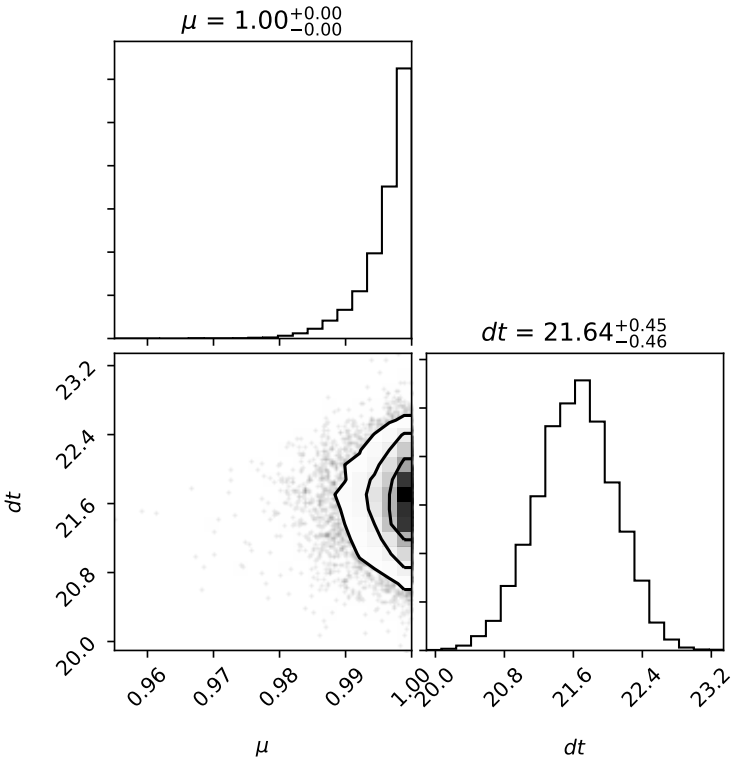

$\mu = 1.00^{+0.00}_{-0.00}$
$dt = 21.29^{+0.42}_{-0.39}$
dt
μ


$\mu = 1.00^{+0.00}_{-0.73}$
$dt = 21.50^{+0.91}_{-0.48}$
dt
μ


$\mu = 1.00^{+0.00}_{-0.00}$
$dt = 21.45^{+0.47}_{-0.43}$
dt
μ


$\mu = 1.00^{+0.00}_{-0.00}$
$dt = 21.49^{+0.47}_{-0.43}$
dt
μ


$\mu = 1.00^{+0.00}_{-0.00}$
$dt = 21.59^{+0.46}_{-0.45}$
dt
μ
0.960
0.975
0.990
20.0
20.8
21.6
22.4
23.2


$\mu = 1.00^{+0.00}_{-0.00}$
$dt = 21.64^{+0.45}_{-0.46}$
dt
μ
0.96
0.97
0.98
0.99
1.00
20.0
20.8
21.6
22.4
23.2