celegance_post.csv_run_4_20250529_140327

May 29, 2025

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/Users/navehr/Dropbox/naveh/weizmann/uri alon/aging/code_3
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Loading file from: /Users/navehr/Dropbox/naveh/weizmann/uri
alon/aging/code_3/baysian02/posterior_csvs_baysian01/celegance_post.csv
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Reading Celegance
```

1 # 1. Density coner plot

A sample is 1 parameter set scanned. For the corner plot below, the quantiles (represented by the solid lines) are 0.16,0.5,0.84 of the samples. Dots represent individual samples (outside the line surrounding 0.84 of the samples) The parameter search is performed in the transformed space of x_c/η, β/η, x_c^2/ϵ, x_c but we also show the regular parameters

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(16,)
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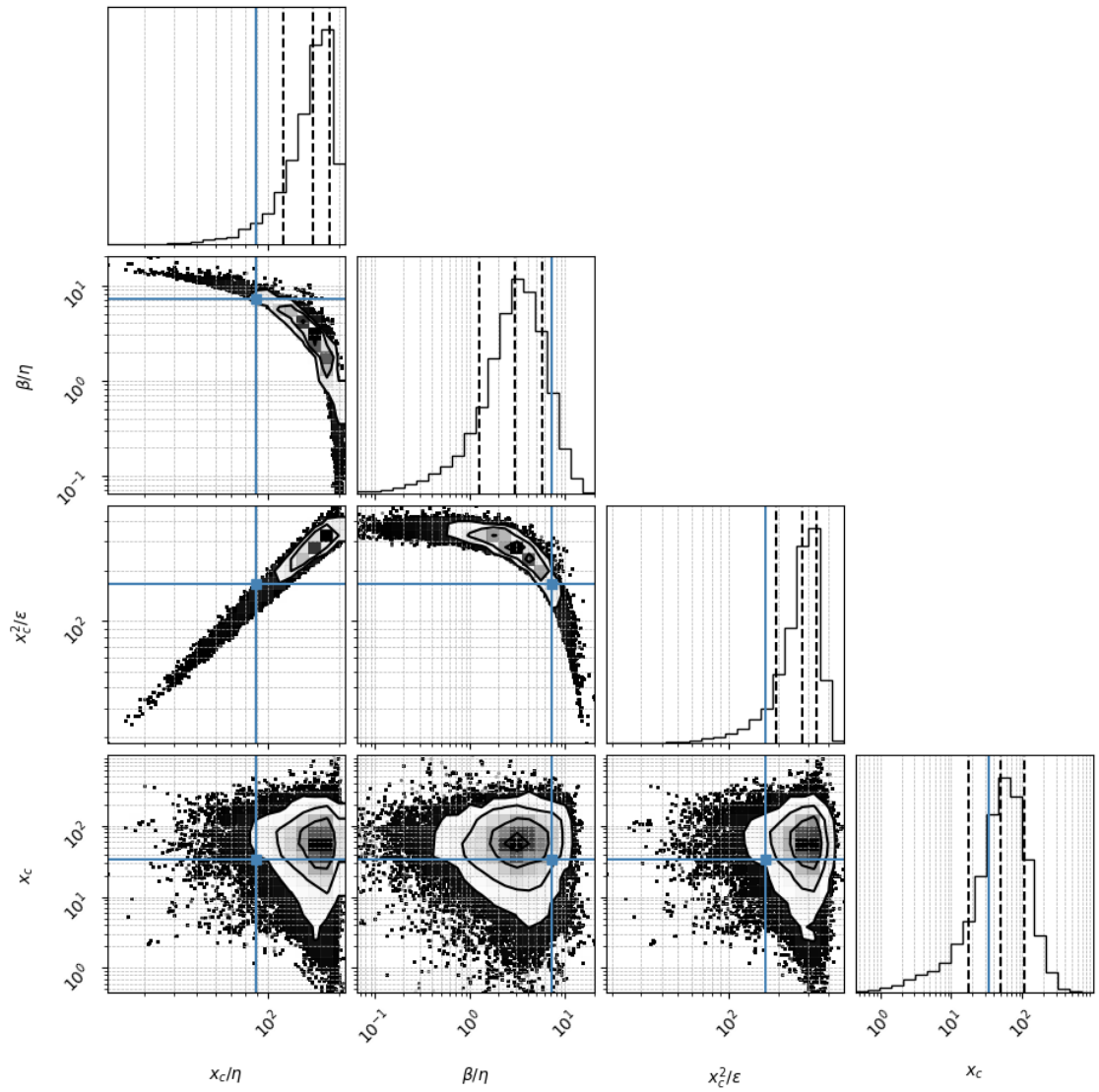
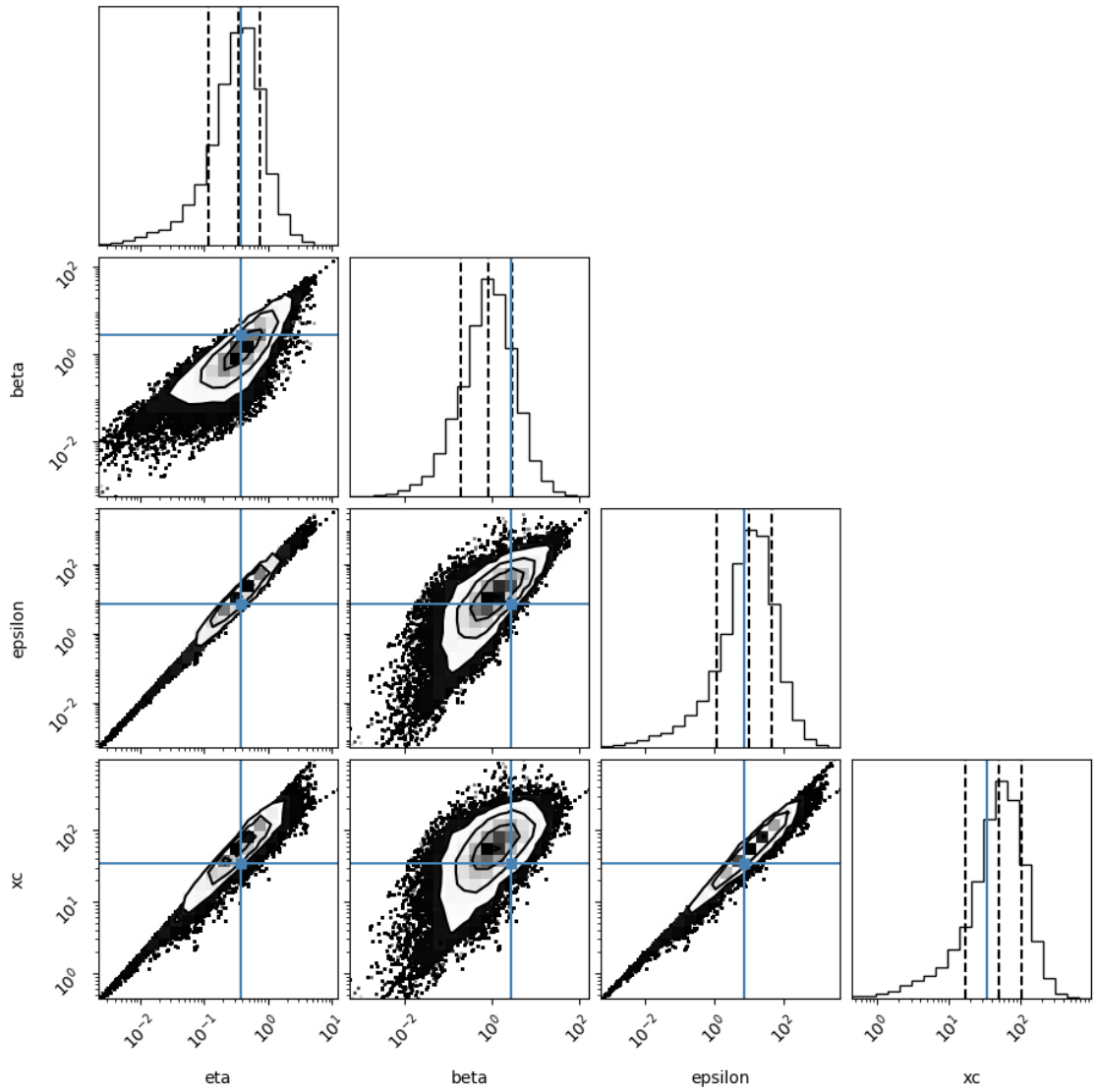
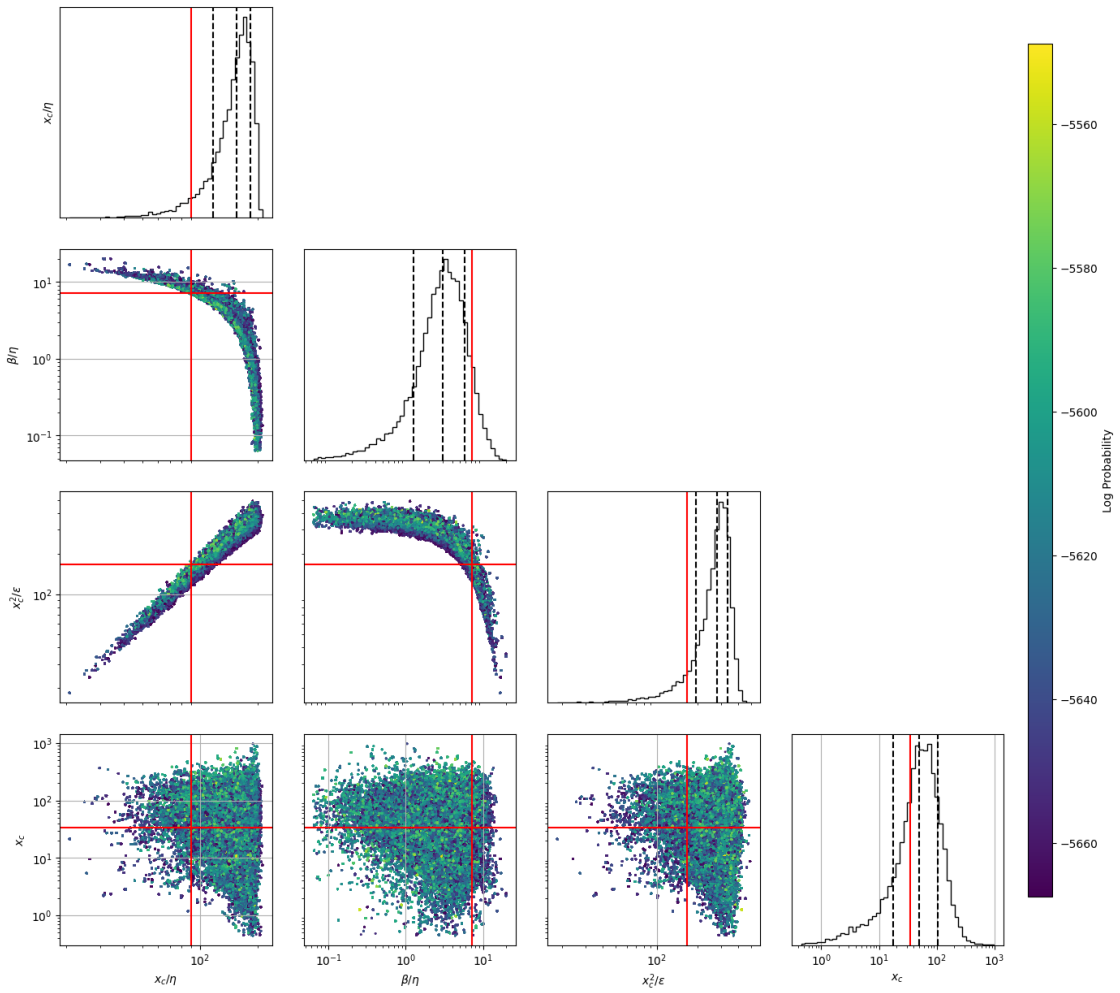

x_c/η
β/η
x_c^2/ε
x_c



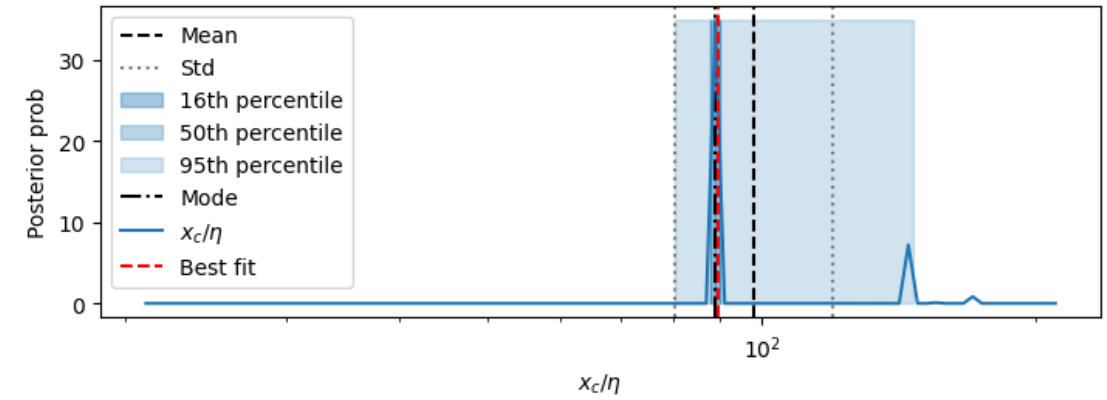
2 2. Heat map corner plot of raw samples

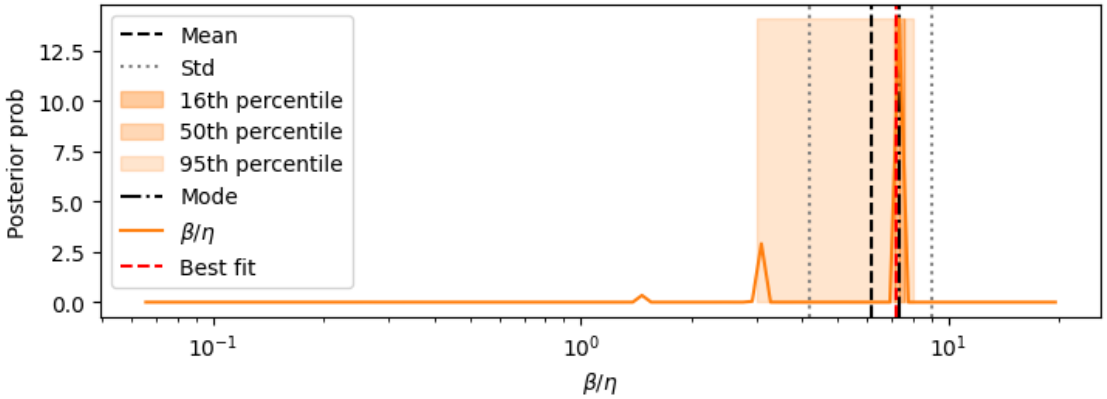
This plot shows all the raw sample points and their lnprobability

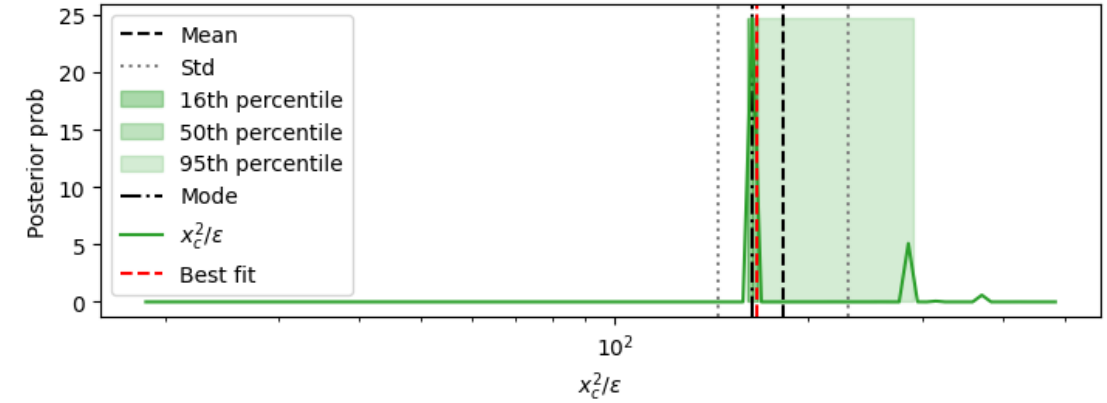


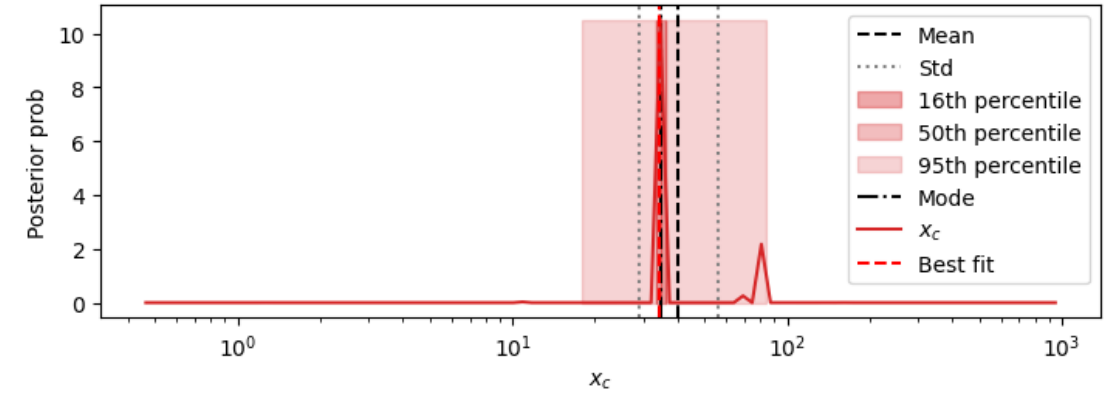
3 3. Posterior distributions of parameters

1d marginalizations of posterior distributions. we use a grid of size nbins=100-150

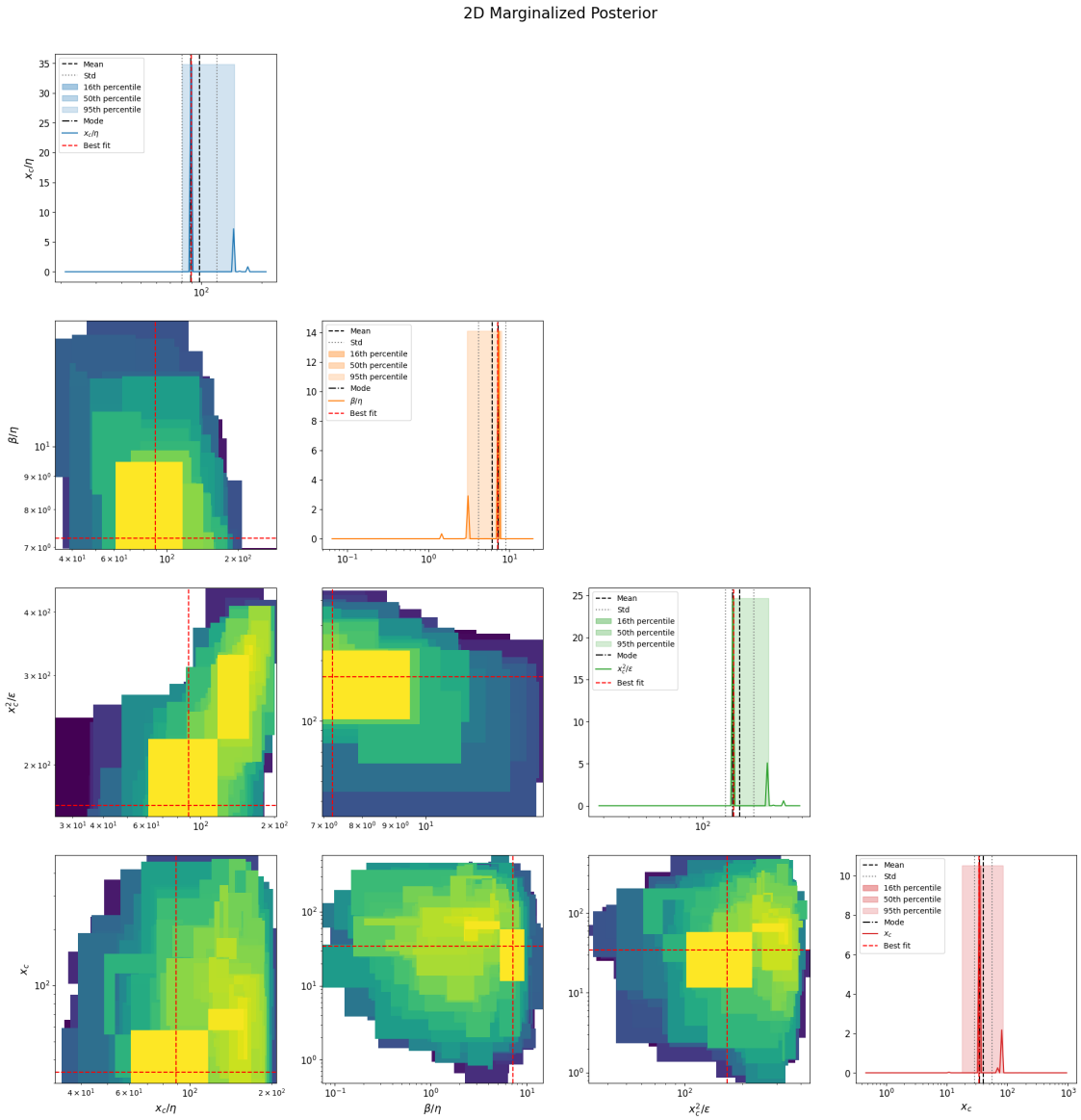

Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c/η
Best fit
Posterior prob
x_c/η


Mean
Std
16th percentile
50th percentile
95th percentile
Mode
β/η
Best fit
Posterior prob
β/η


Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c^2/ε
Best fit
Posterior prob
x_c^2/ε


Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c
Best fit
Posterior prob
x_c

2D marginalizations of posterior distributions



4 4. Table of results

mode is the marginalized mode, max_likwlihood is the sample with highest likelihood mode_overall is the 4D posterior mode

	mean	std	mode	\
xc/eta	97.945	[21.631, 17.718]	174.68	

beta/eta	6.145	[2.866, 1.954]	3.098
xc^2/epsilon	182.744	[47.883, 37.942]	295.413
xc	40.292	[15.868, 11.384]	74.681
eta	0.393	[0.0564, 0.0493]	0.376
beta	2.65	[0.474, 0.402]	0.152
epsilon	7.551	[3.565, 2.422]	23.613
sqrt(xc/eta)	10.685	[1.402, 1.24]	13.217
s= eta^0.5*xc^1.5/epsilon	20.581	[3.474, 2.972]	23.882
beta*xc/epsilon	8.947	[4.287, 2.898]	6.21
eta*xc/epsilon	1.937	[0.0788, 0.0757]	1.862
Fx=beta^2/eta*xc	0.191	[0.386, 0.128]	0.059
Dx =beta*epsilon/eta*xc^2	0.0218	[0.023, 0.0112]	0.0102
Pk=beta*k/epsilon	0.0406	[0.00253, 0.00238]	0.0405
Fk=beta^2/eta*k	12.084	[1.204, 1.095]	40.453
Dk =beta*epsilon/eta*k^2	313.618	[89.24, 69.472]	386.763
Fk^2/Dk=beta^3/eta*epsilon	0.457	[0.0497, 0.0448]	0.38
epsilon/beta^2	0.955	[0.703, 0.405]	0.876
k/beta	0.186	[0.0503, 0.0396]	2.553
k^2/epsilon	0.037	[0.0046, 0.00409]	0.0199
best fit_MedianLifetime	18.42	0.51	18.42
best fit_MaxLifetime	27.82	0	27.82
data_MedianLifetime	18.46	0.52	18.46
data_MaxLifetime	35.38	0	35.38

	percentile_16 \
xc/eta	[172.661, 176.723]
beta/eta	[3.01, 3.189]
xc^2/epsilon	[290.599, 300.308]
xc	[71.861, 77.612]
eta	[0.36, 0.393]
beta	[0.143, 0.162]
epsilon	[21.814, 25.559]
sqrt(xc/eta)	[12.988, 13.294]
s= eta^0.5*xc^1.5/epsilon	[23.622, 24.144]
beta*xc/epsilon	[6.045, 6.38]
eta*xc/epsilon	[1.852, 1.872]
Fx=beta^2/eta*xc	[0.0552, 0.0631]
Dx =beta*epsilon/eta*xc^2	[0.00972, 0.0106]
Pk=beta*k/epsilon	[0.0383, 0.0428]
Fk=beta^2/eta*k	[37.104, 52.424]
Dk =beta*epsilon/eta*k^2	[350.706, 426.527]
Fk^2/Dk=beta^3/eta*epsilon	[0.347, 0.418]
epsilon/beta^2	[0.722, 1.21]
k/beta	[2.396, 2.719]
k^2/epsilon	[0.0184, 0.0253]
best fit_MedianLifetime	[17.930000000000003, 18.930000000000003]
best fit_MaxLifetime	[27.82, 27.82]

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data_MedianLifetime                                  [17.98, 18.98]
data_MaxLifetime                                     [35.38, 35.38]

                                                      percentile_50  \
xc/eta                                             [164.813, 180.882]
beta/eta                                                [3.01, 3.578]
xc^2/epsilon                                       [281.204, 310.34]
xc                                                  [66.536, 83.824]
eta                                                   [0.303, 0.428]
beta                                                  [0.111, 0.209]
epsilon                                            [21.814, 29.946]
sqrt(xc/eta)                                       [12.543, 13.607]
s= eta^0.5*xc^1.5/epsilon                          [23.112, 24.676]
beta*xc/epsilon                                       [6.045, 6.734]
eta*xc/epsilon                                        [1.812, 1.934]
Fx=beta^2/eta*xc                                   [0.0482, 0.0721]
Dx =beta*epsilon/eta*xc^2                          [0.00891, 0.0116]
Pk=beta*k/epsilon                                  [0.0344, 0.0428]
Fk=beta^2/eta*k                                    [13.155, 52.424]
Dk =beta*epsilon/eta*k^2                           [237.104, 518.739]
Fk^2/Dk=beta^3/eta*epsilon                            [0.288, 0.503]
epsilon/beta^2                                        [0.722, 9.554]
k/beta                                                [2.111, 3.502]
k^2/epsilon                                        [0.0157, 0.0296]
best fit_MedianLifetime     [17.930000000000003, 18.930000000000003]
best fit_MaxLifetime                                  [27.82, 27.82]
data_MedianLifetime                                  [17.98, 18.98]
data_MaxLifetime                                     [35.38, 35.38]

                                                      percentile_95  \
xc/eta                                             [140.052, 189.494]
beta/eta                                                [1.693, 8.008]
xc^2/epsilon                                       [254.804, 390.609]
xc                                                  [30.81, 155.189]
eta                                                   [0.255, 0.718]
beta                                                 [0.0275, 3.828]
epsilon                                              [5.243, 35.087]
sqrt(xc/eta)                                       [10.658, 13.766]
s= eta^0.5*xc^1.5/epsilon                          [19.837, 26.928]
beta*xc/epsilon                                       [5.143, 8.354]
eta*xc/epsilon                                        [1.812, 2.042]
Fx=beta^2/eta*xc                                      [0.011, 0.705]
Dx =beta*epsilon/eta*xc^2                          [0.00686, 0.0302]
Pk=beta*k/epsilon                                    [0.0143, 0.128]
Fk=beta^2/eta*k                                    [0.0876, 88.043]
Dk =beta*epsilon/eta*k^2                           [6.997, 1678.663]
Fk^2/Dk=beta^3/eta*epsilon                           [0.0212, 8.242]
```
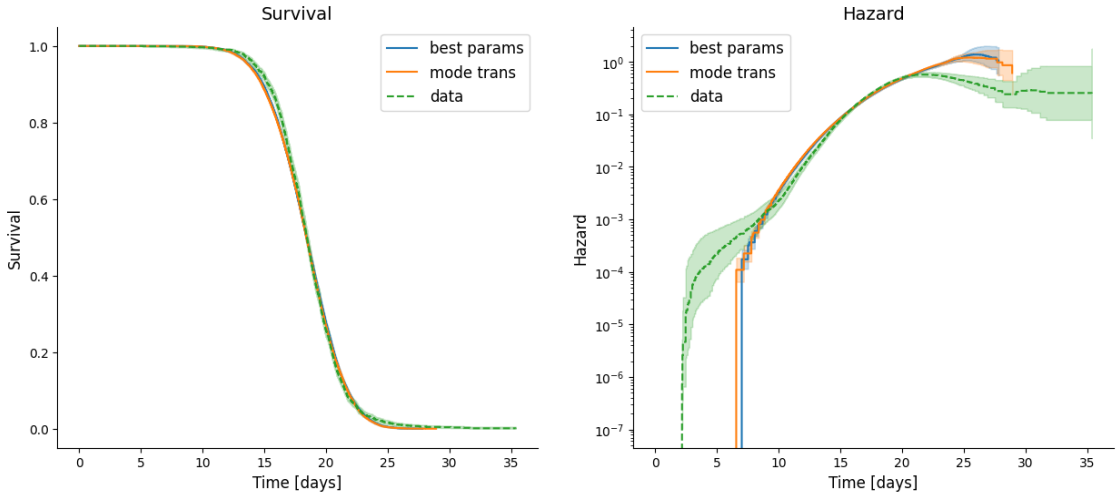
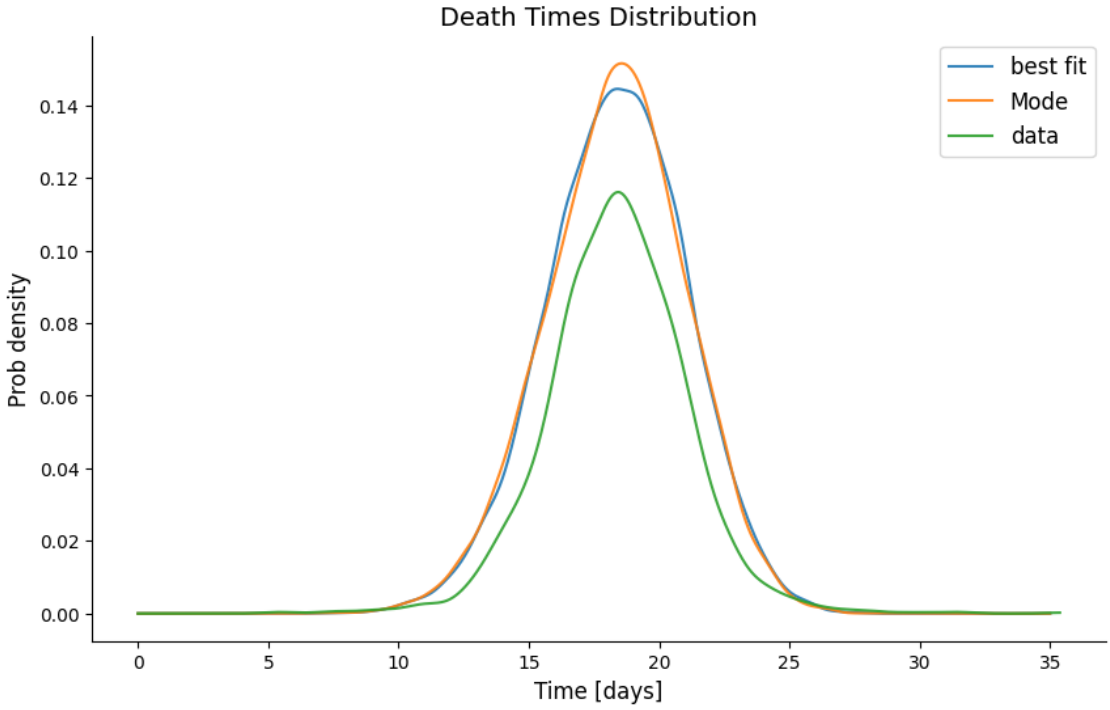

epsilon/beta^2	[0.558, 1469.771]
k/beta	[0.131, 18.141]
k^2/epsilon	[0.00834, 0.0476]
best fit_MedianLifetime	[17.930000000000003, 18.930000000000003]
best fit_MaxLifetime	[27.82, 27.82]
data_MedianLifetime	[17.98, 18.98]
data_MaxLifetime	[35.38, 35.38]

	max_likelihood	mode_overall
xc/eta	89.487	89.487
beta/eta	7.215	7.215
xc^2/epsilon	166.204	166.204
xc	34.27	34.27
eta	0.383	0.383
beta	2.763	2.763
epsilon	7.066	7.066
sqrt(xc/eta)	9.46	9.46
s= eta^0.5*xc^1.5/epsilon	17.57	17.57
beta*xc/epsilon	13.4	13.4
eta*xc/epsilon	1.857	1.857
Fx=beta^2/eta*xc	0.582	0.582
Dx =beta*epsilon/eta*xc^2	0.0434	0.0434
Pk=beta*k/epsilon	0.196	0.0386
Fk=beta^2/eta*k	39.872	11.225
Dk =beta*epsilon/eta*k^2	203.934	290.672
Fk^2/Dk=beta^3/eta*epsilon	7.795	0.433
epsilon/beta^2	0.926	0.926
k/beta	0.181	0.181
k^2/epsilon	0.0354	0.0354
best fit_MedianLifetime	18.42	NaN
best fit_MaxLifetime	27.82	NaN
data_MedianLifetime	18.46	NaN
data_MaxLifetime	35.38	NaN

5 5. Fits of simulations to data

best params is the sample with highest likelihood. mode trans is the 4D posterior mode in the transformed space of x_c/η, β/η, x_c^2/ϵ, x_c


Survival
best params
mode trans
data
Survival
Time [days]
Hazard
best params
mode trans
data
Hazard
Time [days]


Death Times Distribution
best fit
Mode
data
Prob density
Time [days]