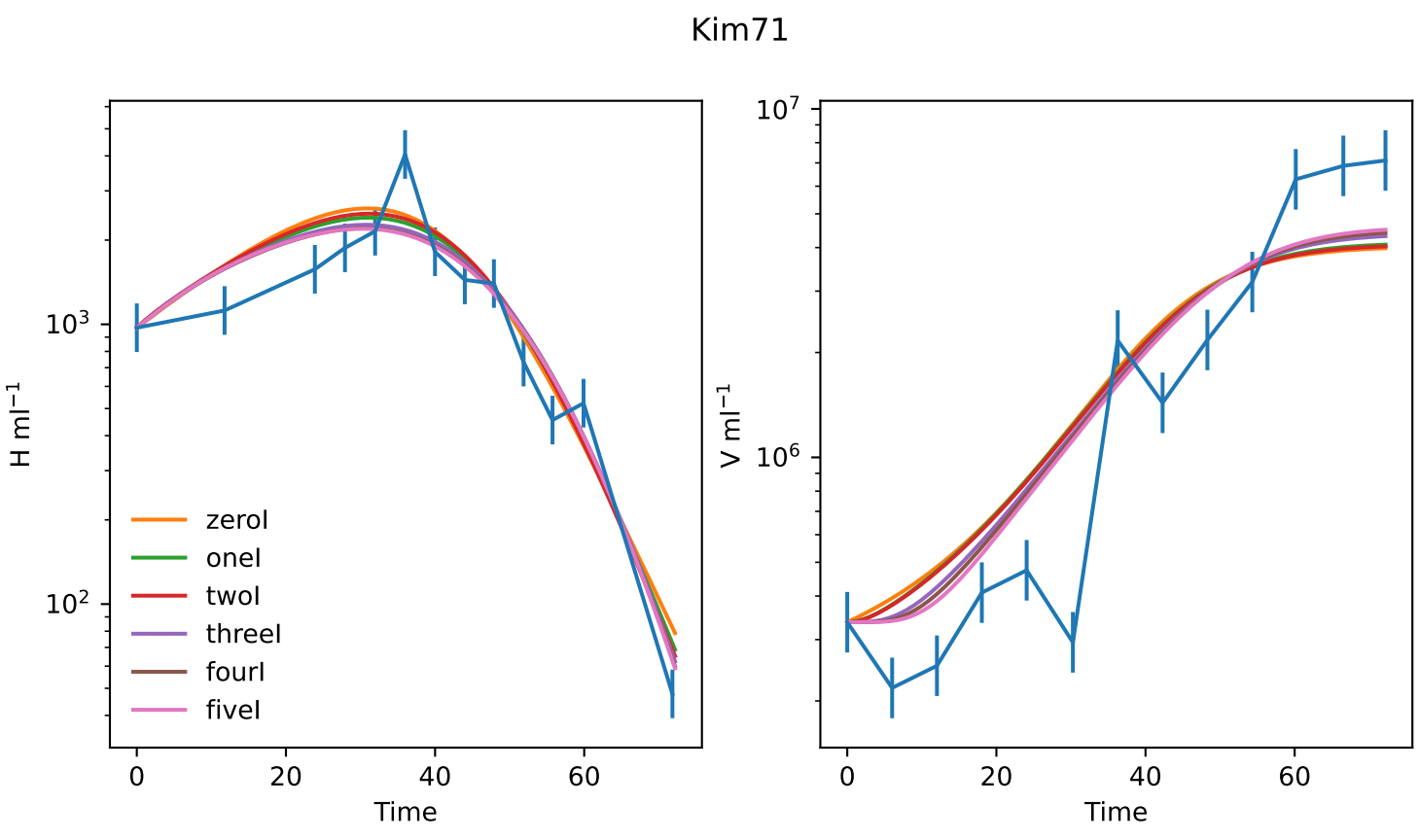
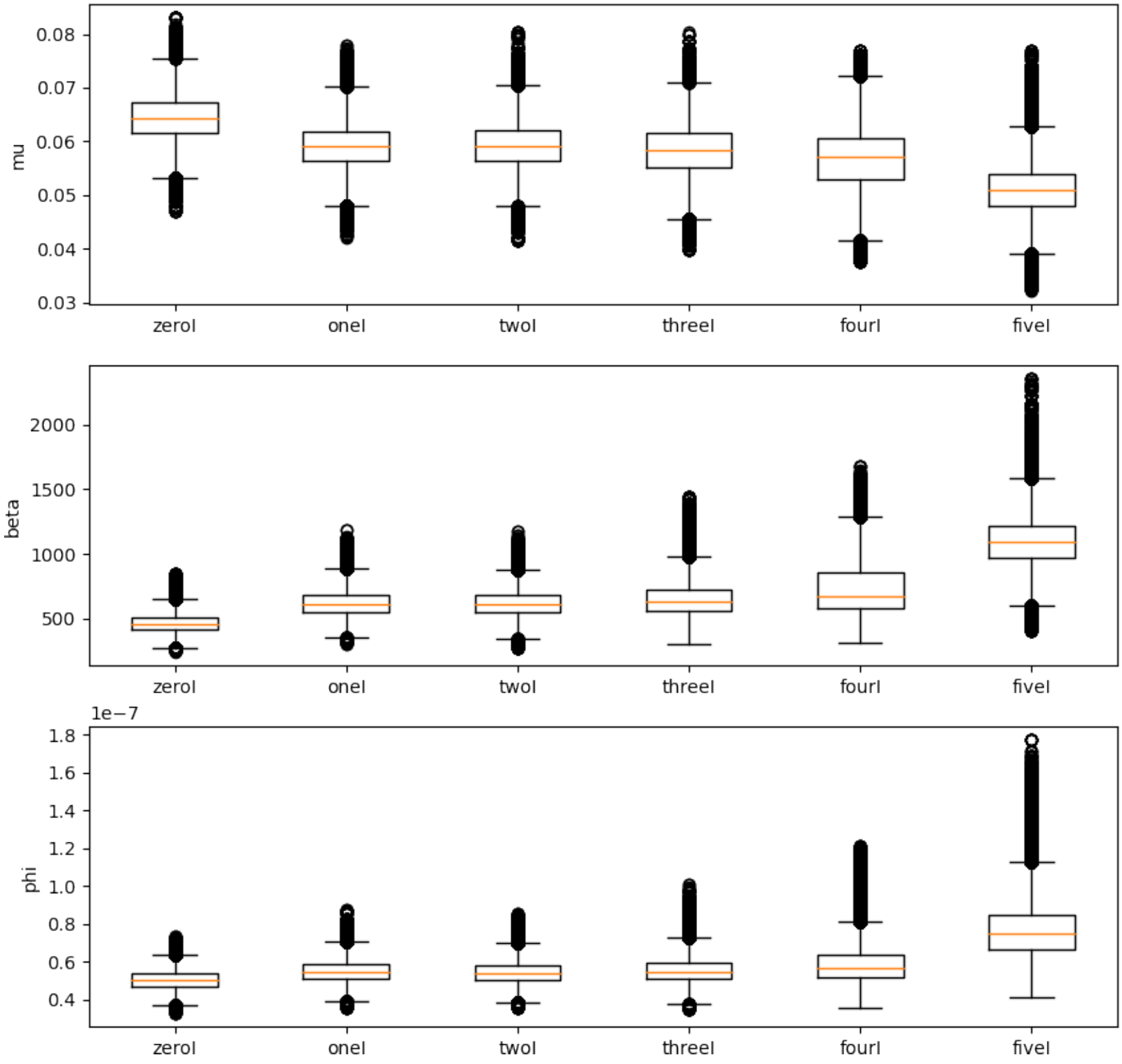
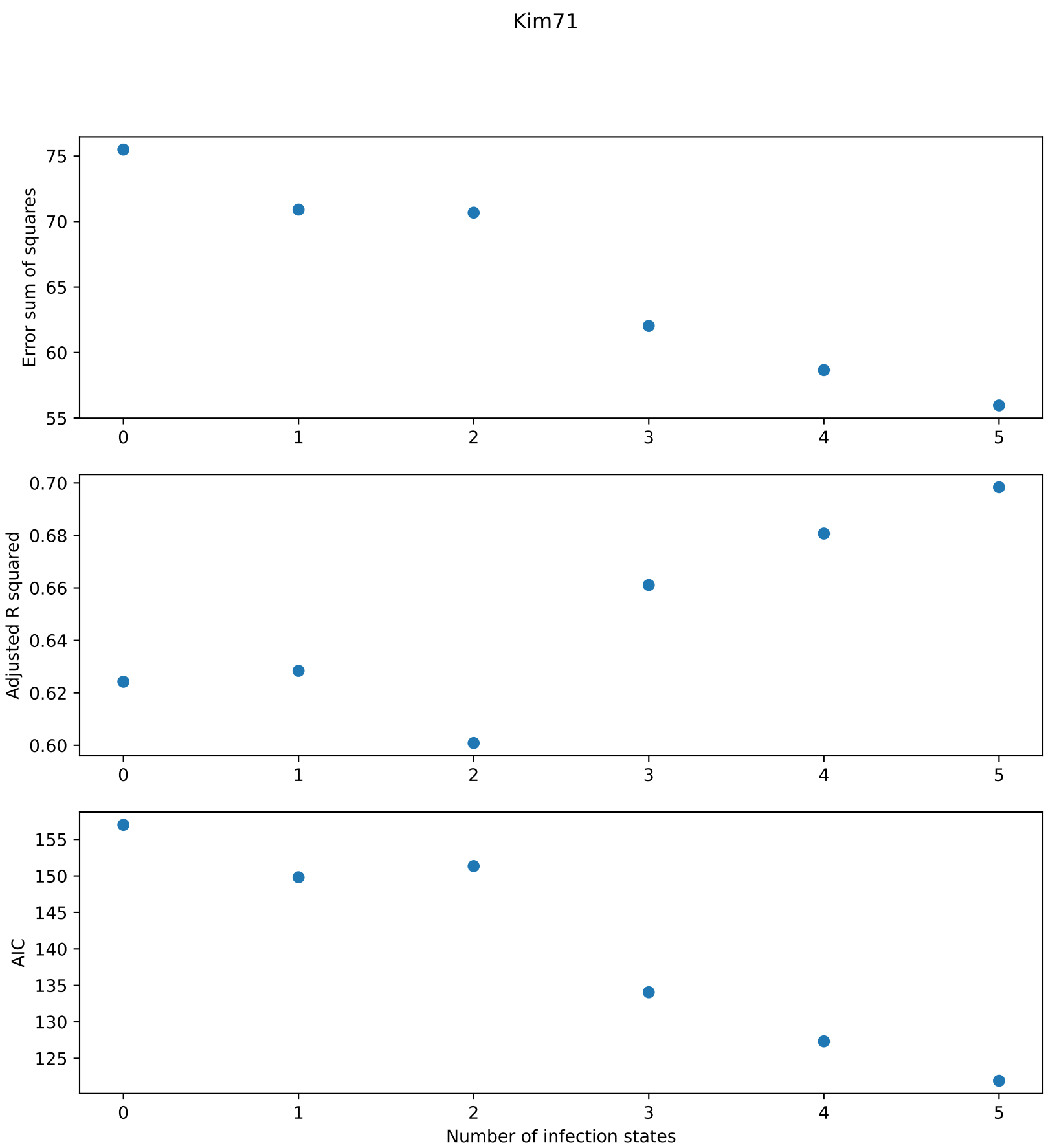
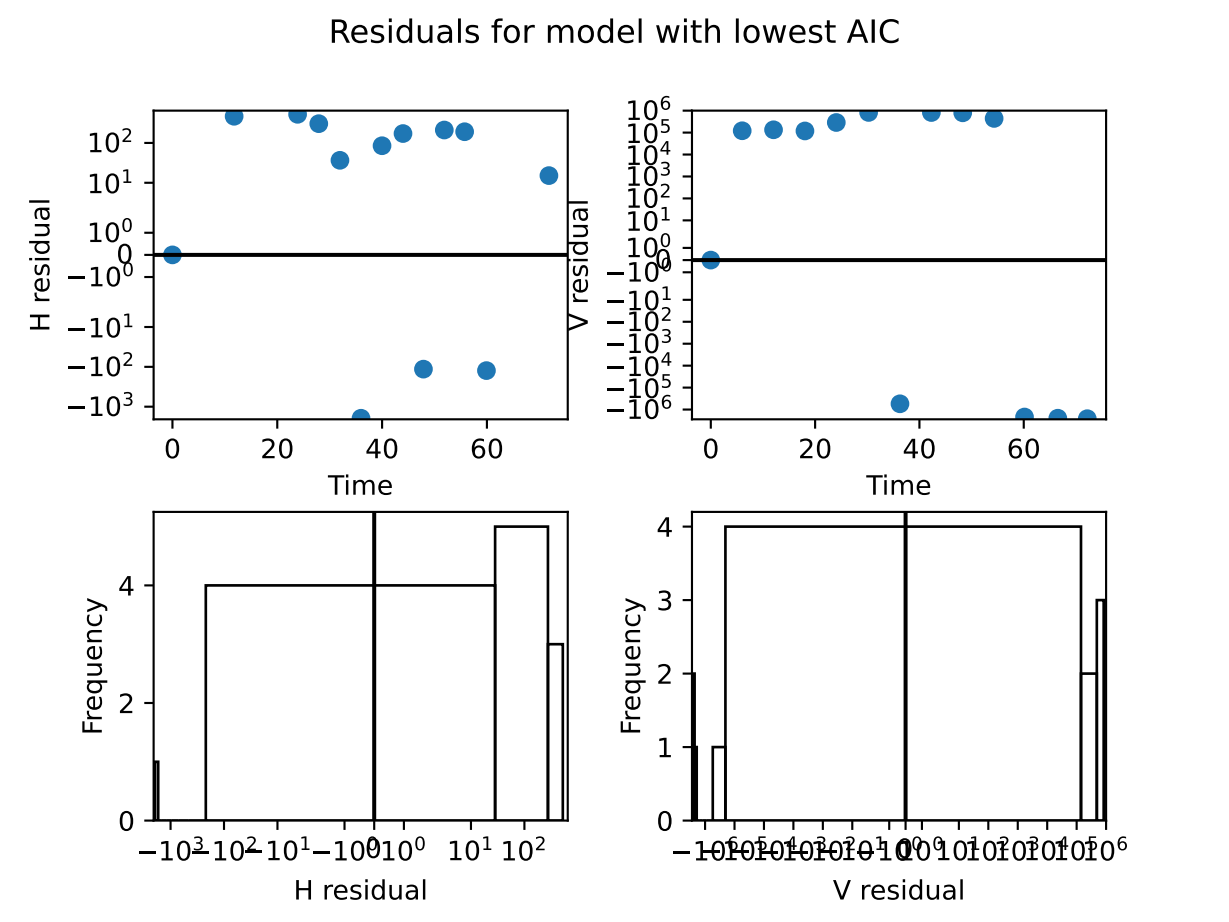

Kim71
H ml$^{-1}$
$10^3$
$10^2$
zerol
onel
twol
threel
fourl
fivel
0
20
40
60
Time
V ml$^{-1}$
$10^7$
$10^6$
0
20
40
60
Time

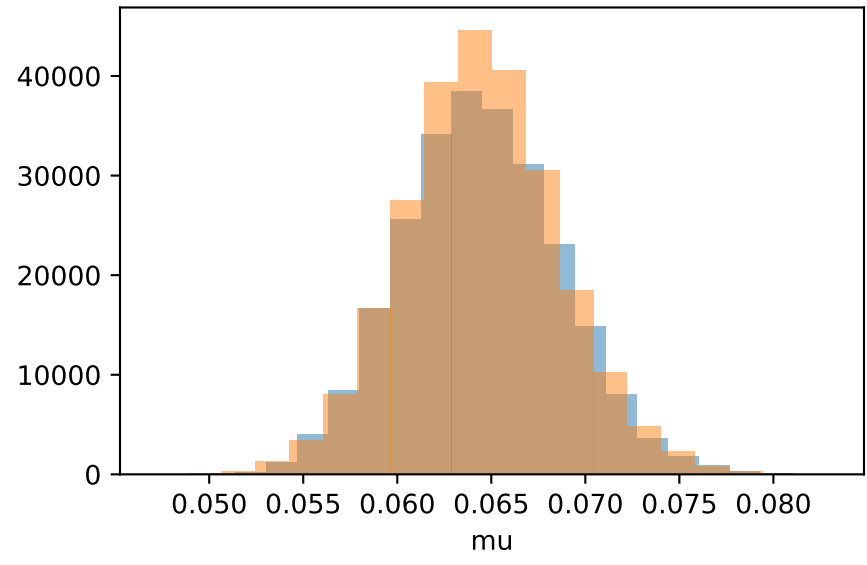
Kim71

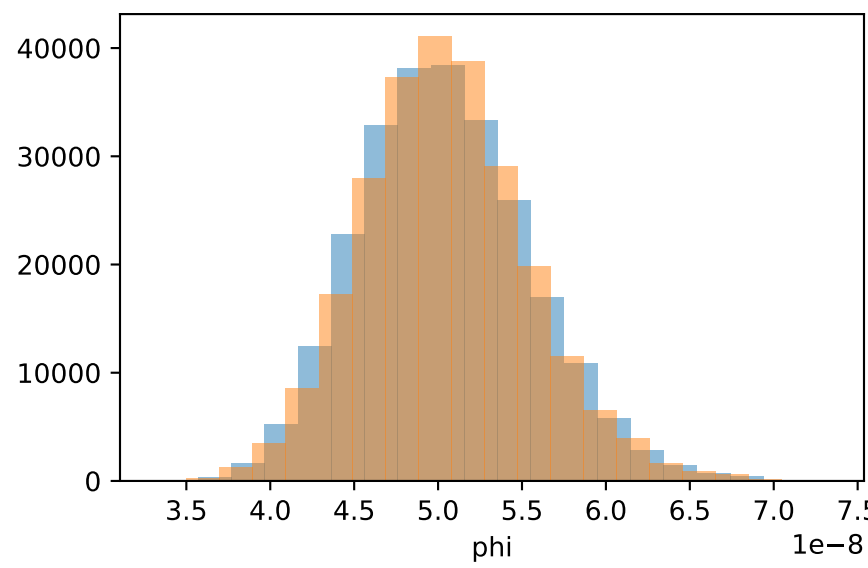

mu
0.08
0.07
0.06
0.05
0.04
0.03
zeroI
oneI
twoI
threeI
fourI
fiveI
beta
2000
1500
1000
500
zeroI
oneI
twoI
threeI
fourI
fiveI
1e−7
phi
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
zeroI
oneI
twoI
threeI
fourI
fiveI

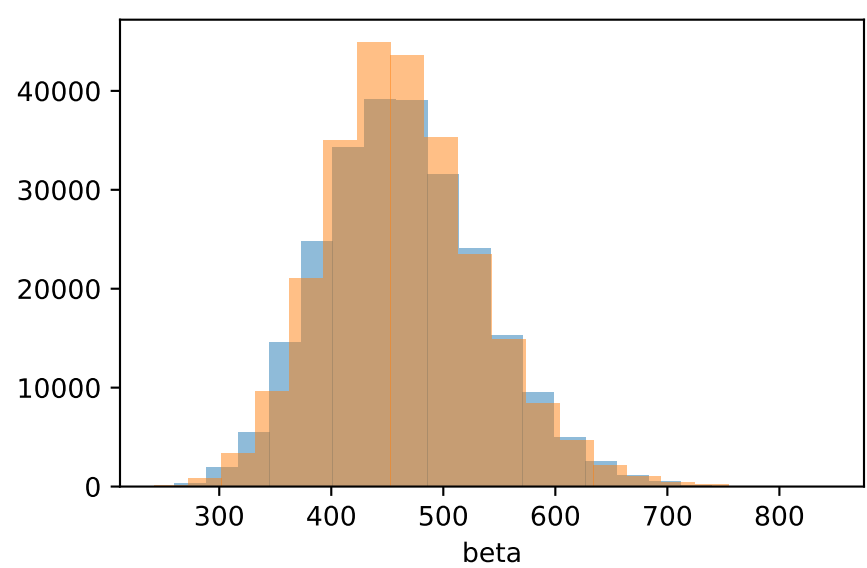

Kim71
Error sum of squares
75
70
65
60
55
0
1
2
3
4
5
Adjusted R squared
0.70
0.68
0.66
0.64
0.62
0.60
0
1
2
3
4
5
AIC
155
150
145
140
135
130
125
0
1
2
3
4
5
Number of infection states

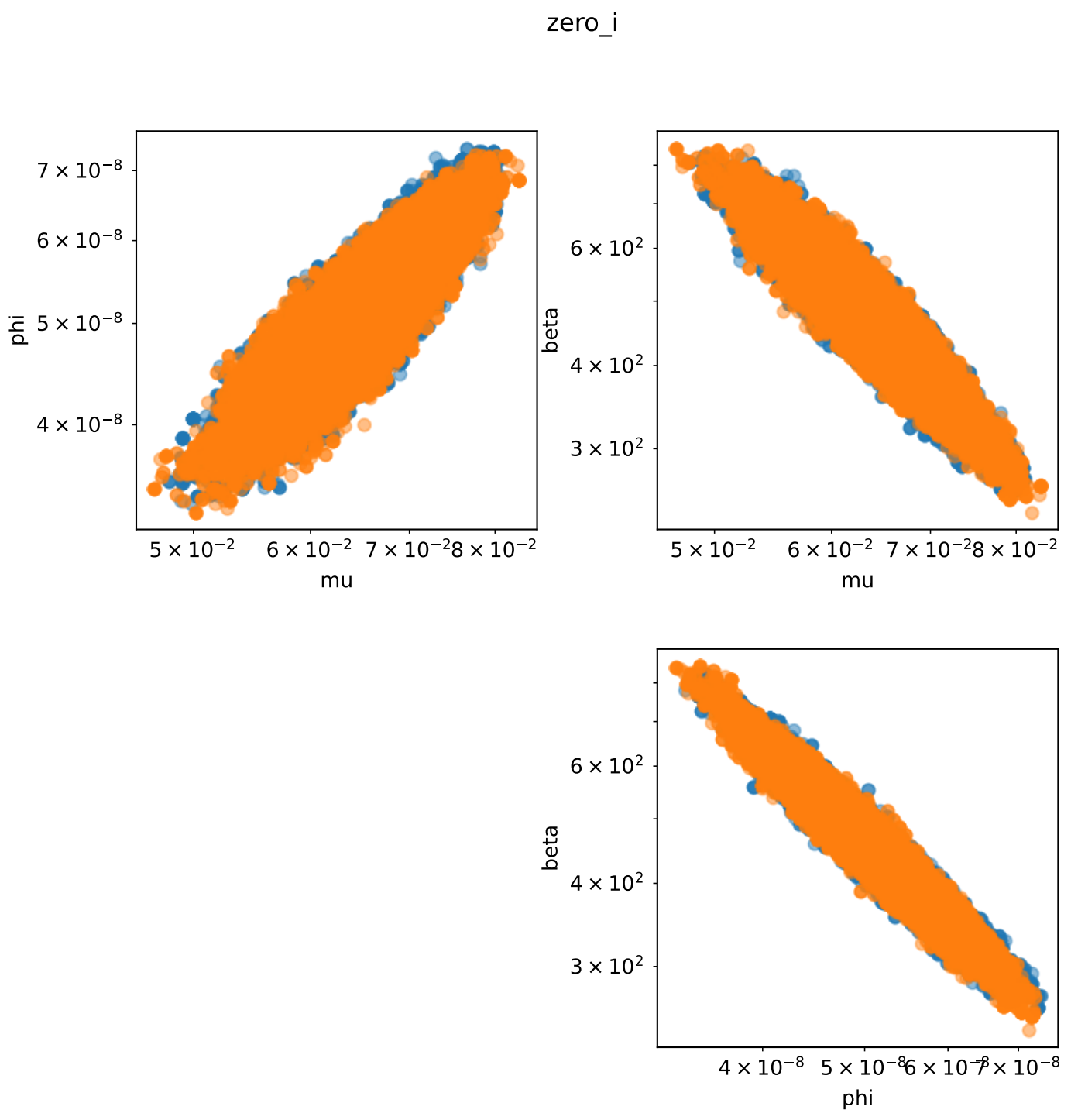

Residuals for model with lowest AIC
H residual
Time
V residual
Time
Frequency
H residual
Frequency
V residual

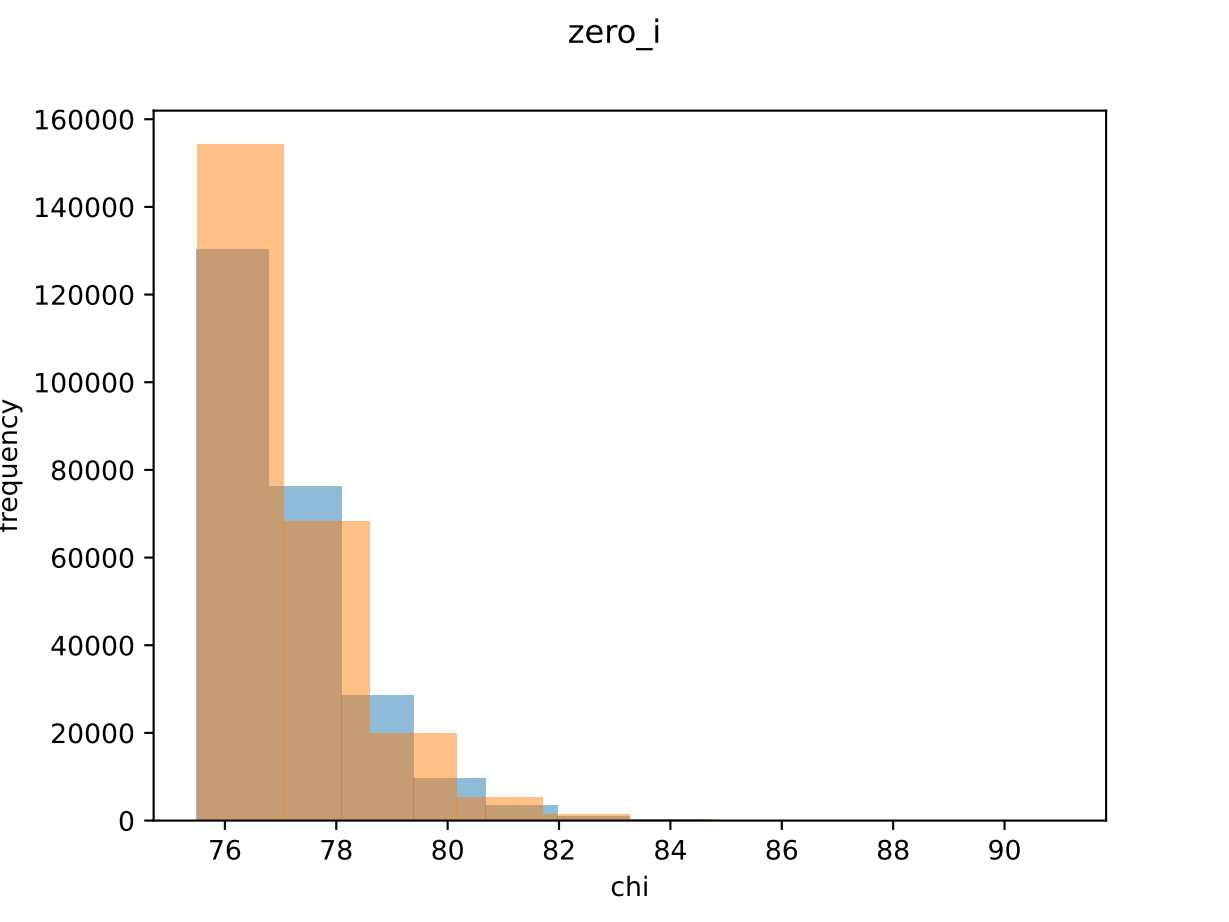
zero_i

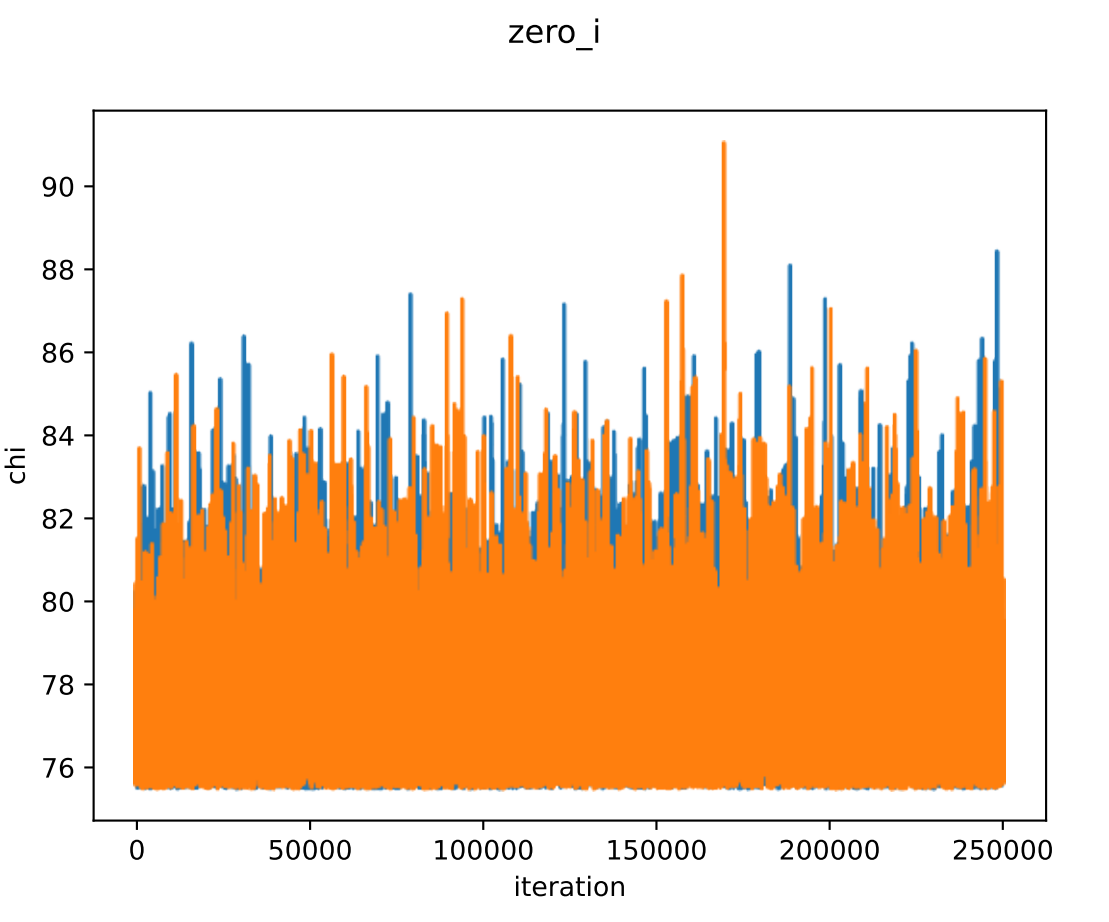

40000
30000
20000
10000
0
0.050
0.055
0.060
0.065
0.070
0.075
0.080
mu


40000
30000
20000
10000
0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
phi
1e−8

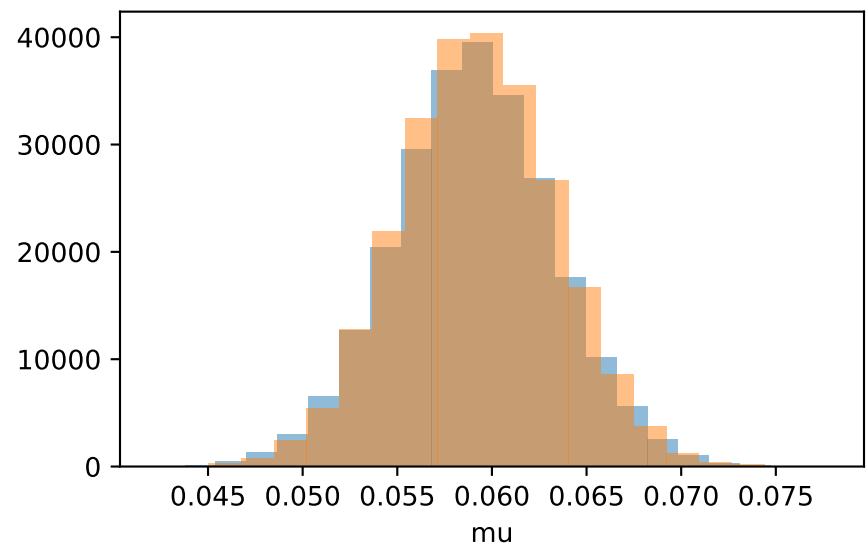

40000
30000
20000
10000
0
300
400
500
600
700
800
beta

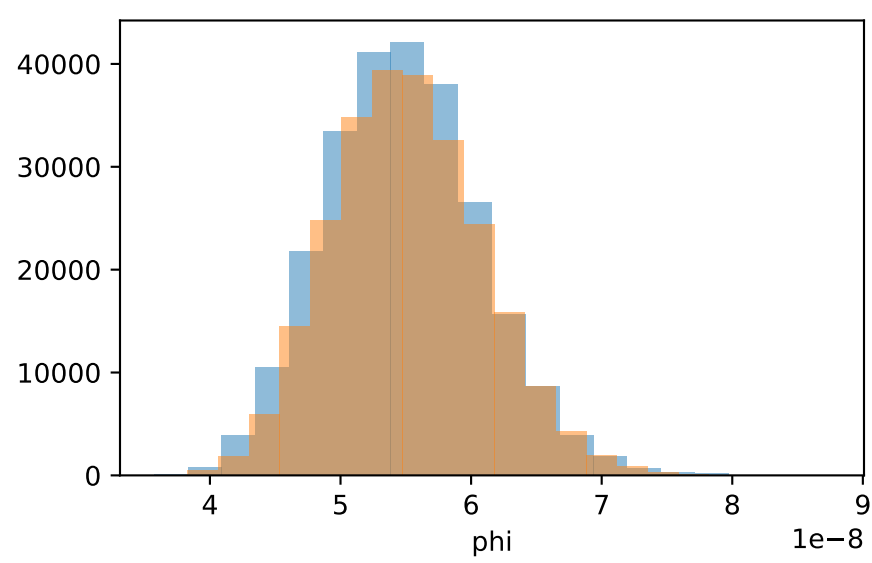

zero_i
phi
mu
beta
mu
beta
phi

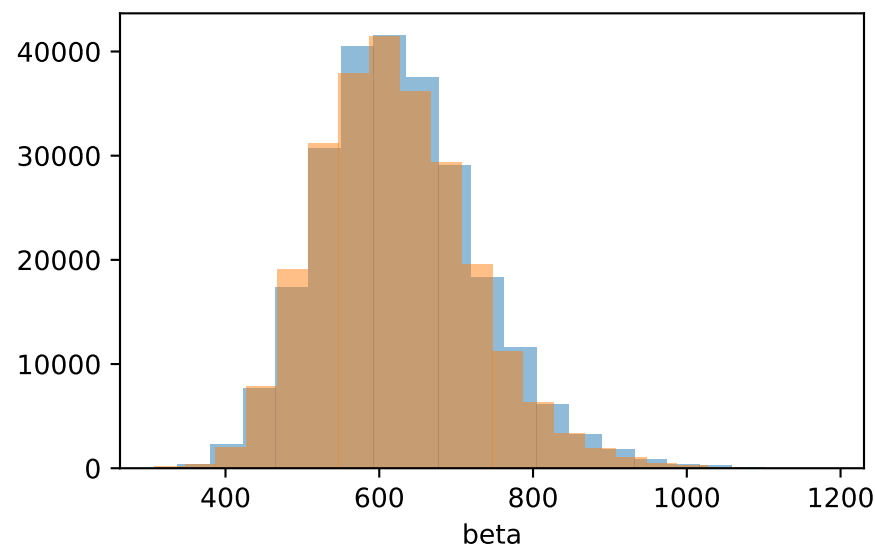

zero_i
160000
140000
120000
100000
80000
60000
40000
20000
0
frequency
76
78
80
82
84
86
88
90
chi

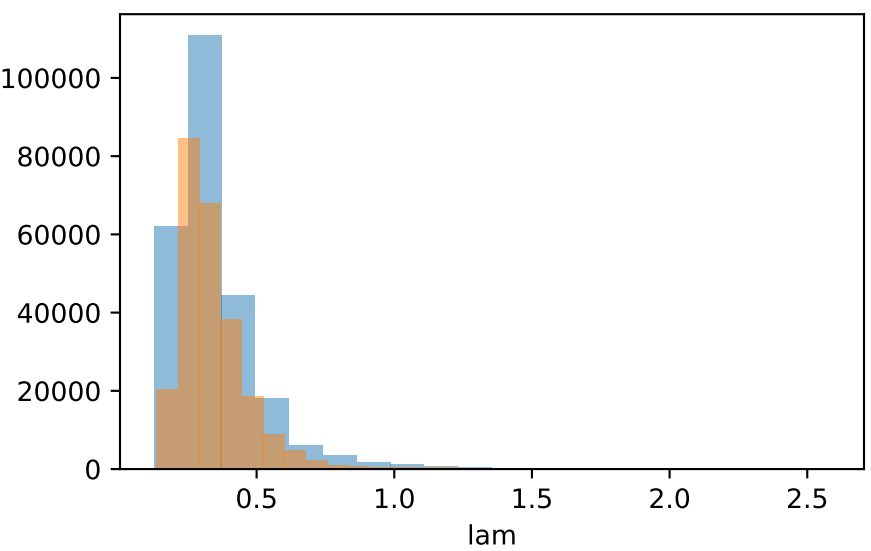

zero_i
chi
iteration
90
88
86
84
82
80
78
76
0
50000
100000
150000
200000
250000

one_i

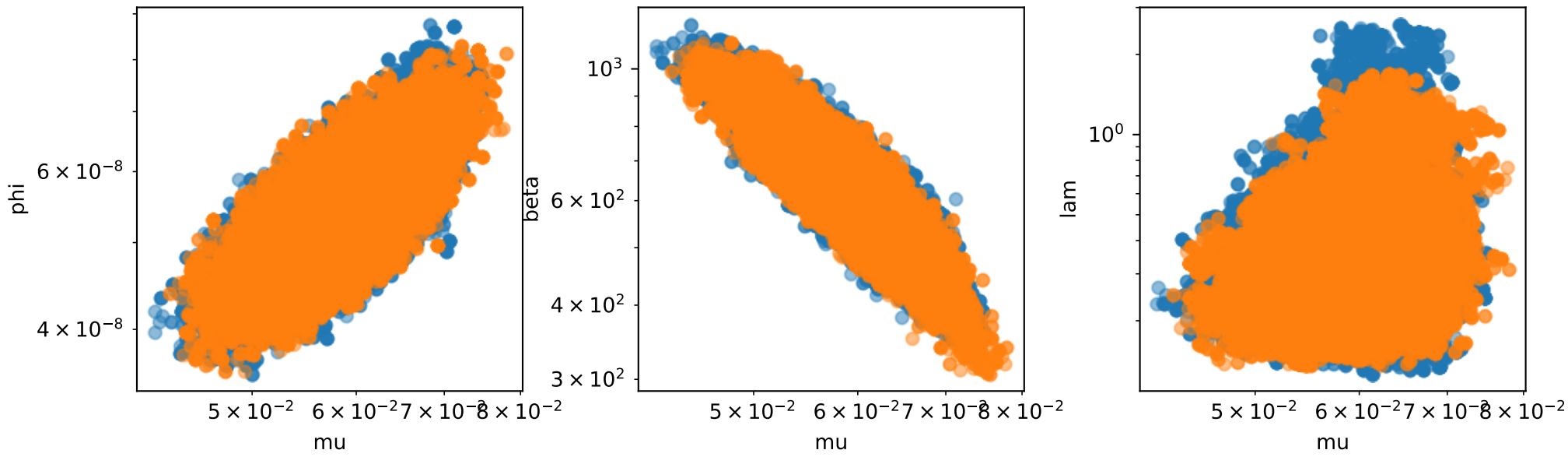

40000
30000
20000
10000
0
0.045
0.050
0.055
0.060
0.065
0.070
0.075
mu

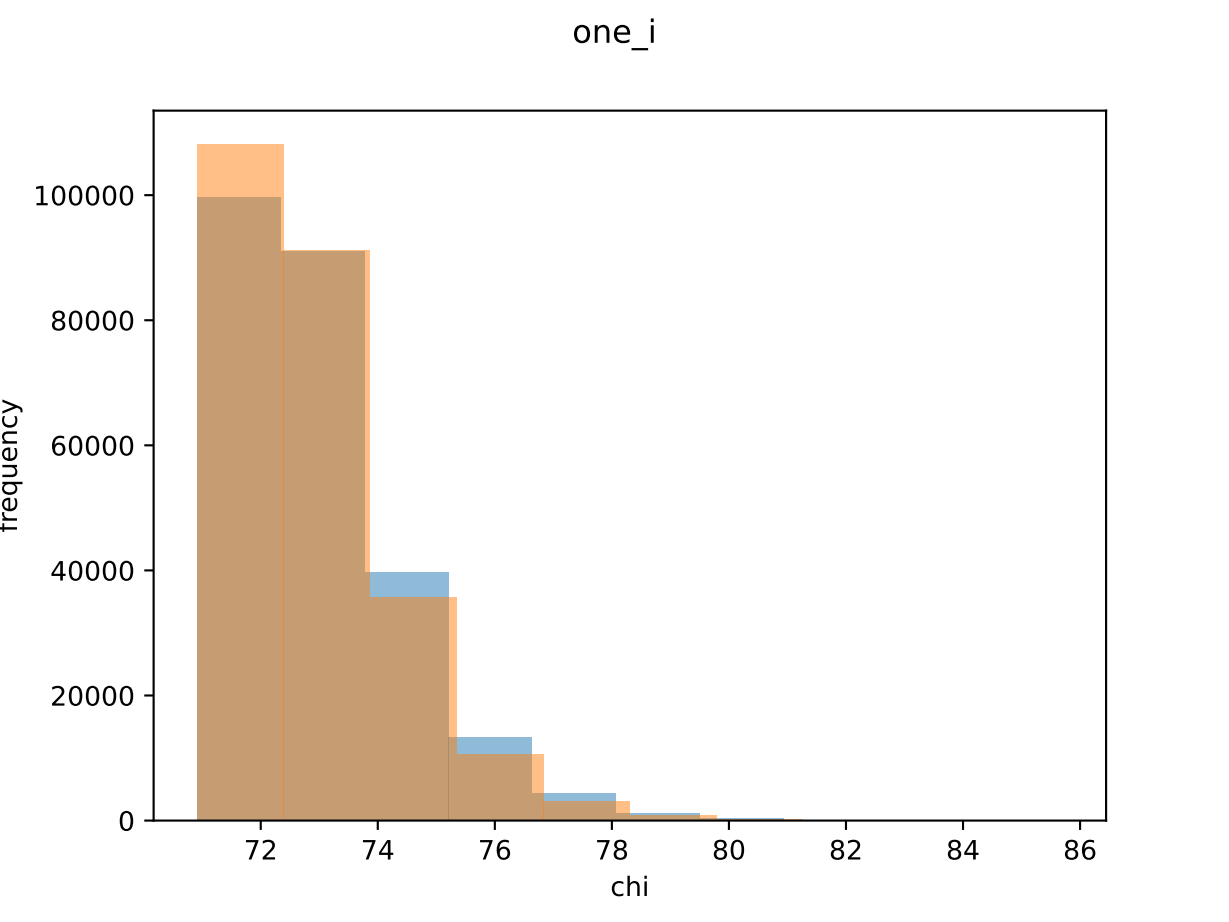

40000
30000
20000
10000
0
4
5
6
7
8
9
phi
1e−8

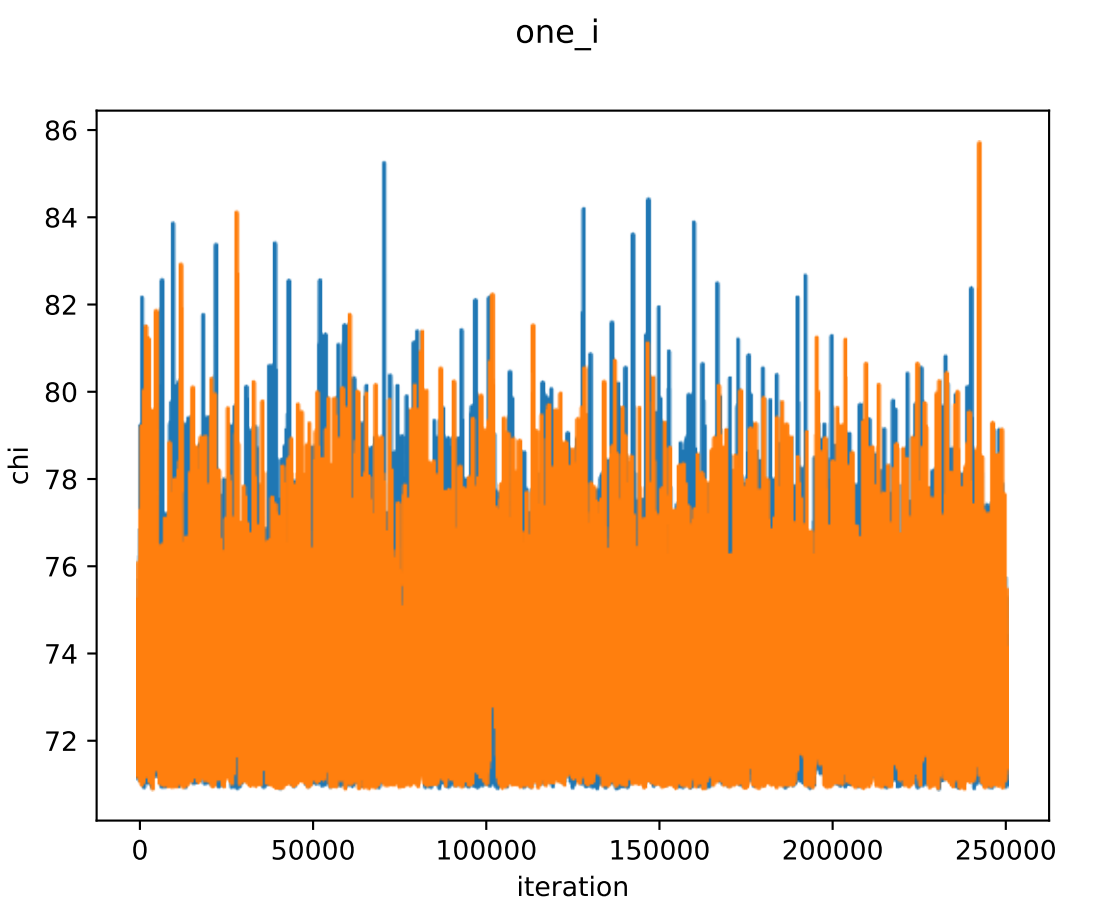

40000
30000
20000
10000
0
400
600
800
1000
1200
beta


100000
80000
60000
40000
20000
0
0.5
1.0
1.5
2.0
2.5
lam

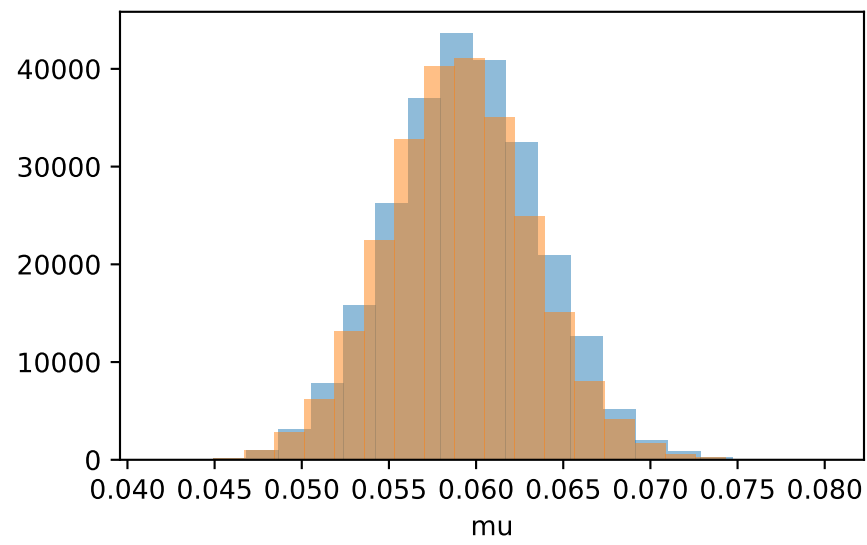
one_i

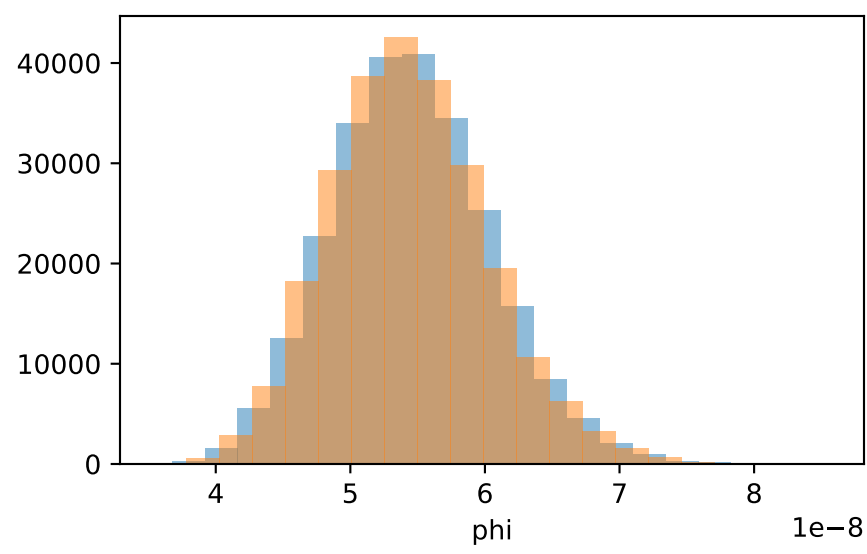

phi
$6 \times 10^{-8}$
$4 \times 10^{-8}$
$5 \times 10^{-2}$
$6 \times 10^{-2}$
$7 \times 10^{-2}$
$8 \times 10^{-2}$
mu
beta
$10^3$
$6 \times 10^2$
$4 \times 10^2$
$3 \times 10^2$
mu
lam
$10^0$
mu
beta
phi
$4 \times 10^{-8}$
$6 \times 10^{-8}$
lam
phi
$3 \times 10^2$
$4 \times 10^2$
$6 \times 10^2$
$10^3$
beta

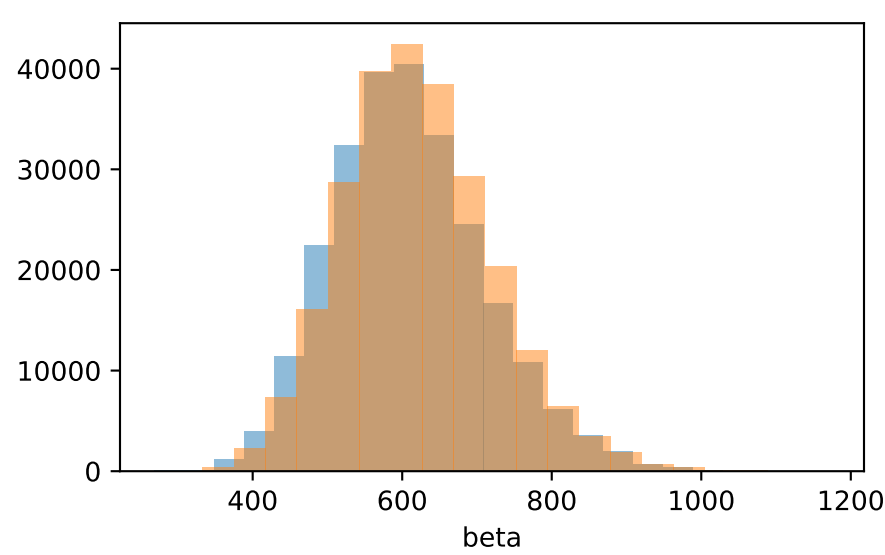

one_i
100000
80000
60000
40000
20000
0
frequency
72
74
76
78
80
82
84
86
chi

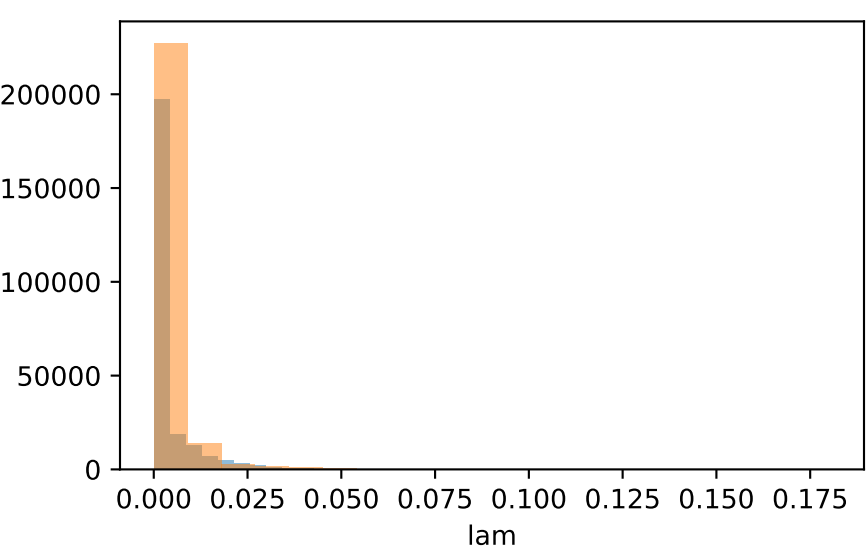

one_i
chi
iteration
86
84
82
80
78
76
74
72
0
50000
100000
150000
200000
250000

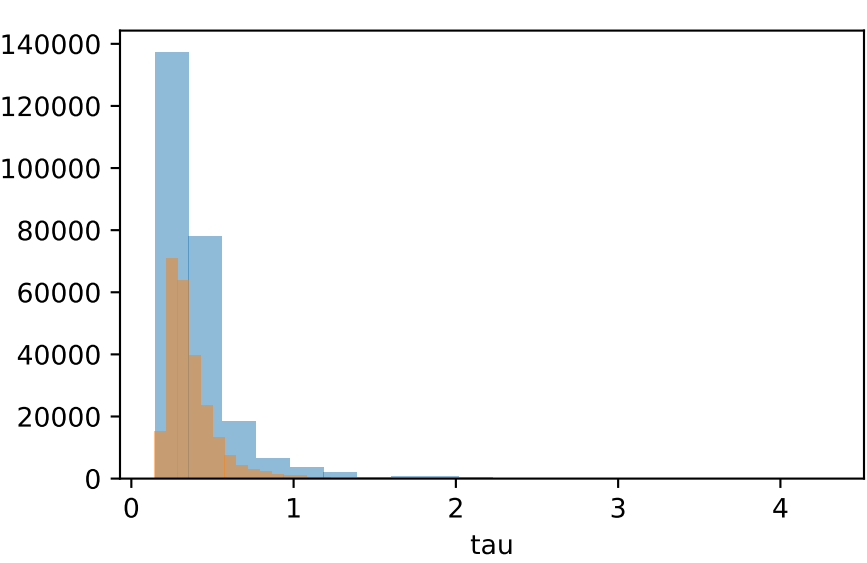
two_i


40000
30000
20000
10000
0
0.040 0.045 0.050 0.055 0.060 0.065 0.070 0.075 0.080
mu

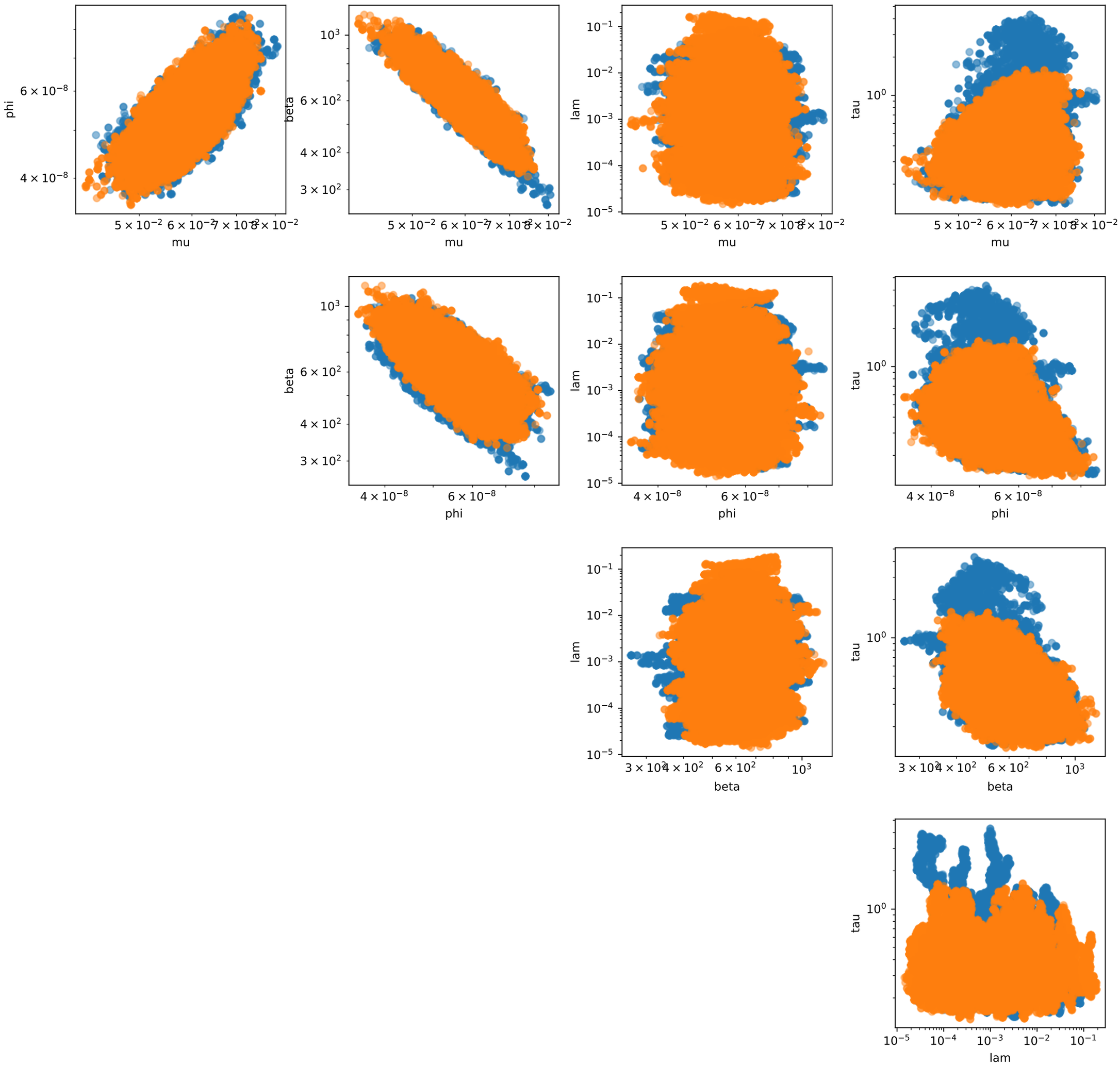

40000
30000
20000
10000
0
4
5
6
7
8
phi
1e−8

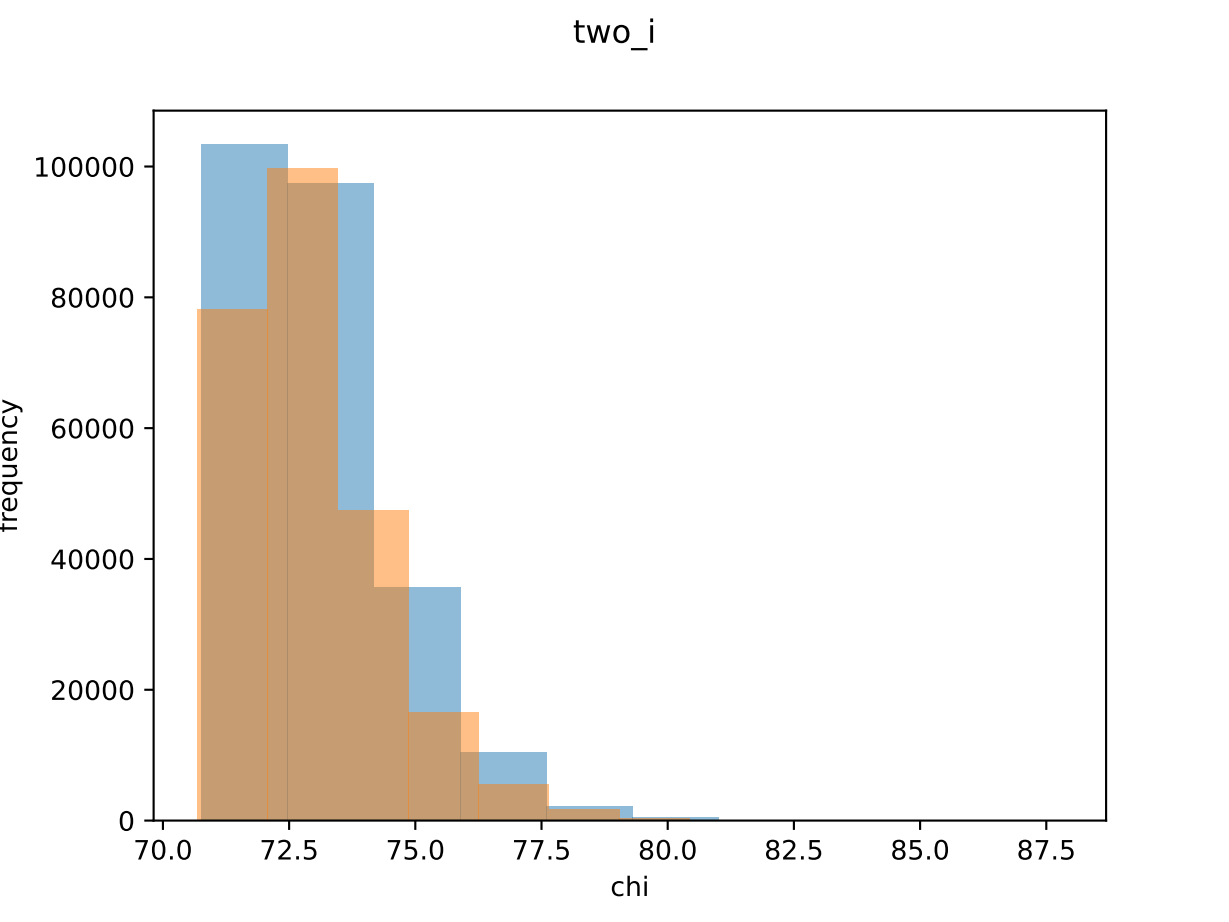

40000
30000
20000
10000
0
400
600
800
1000
1200
beta

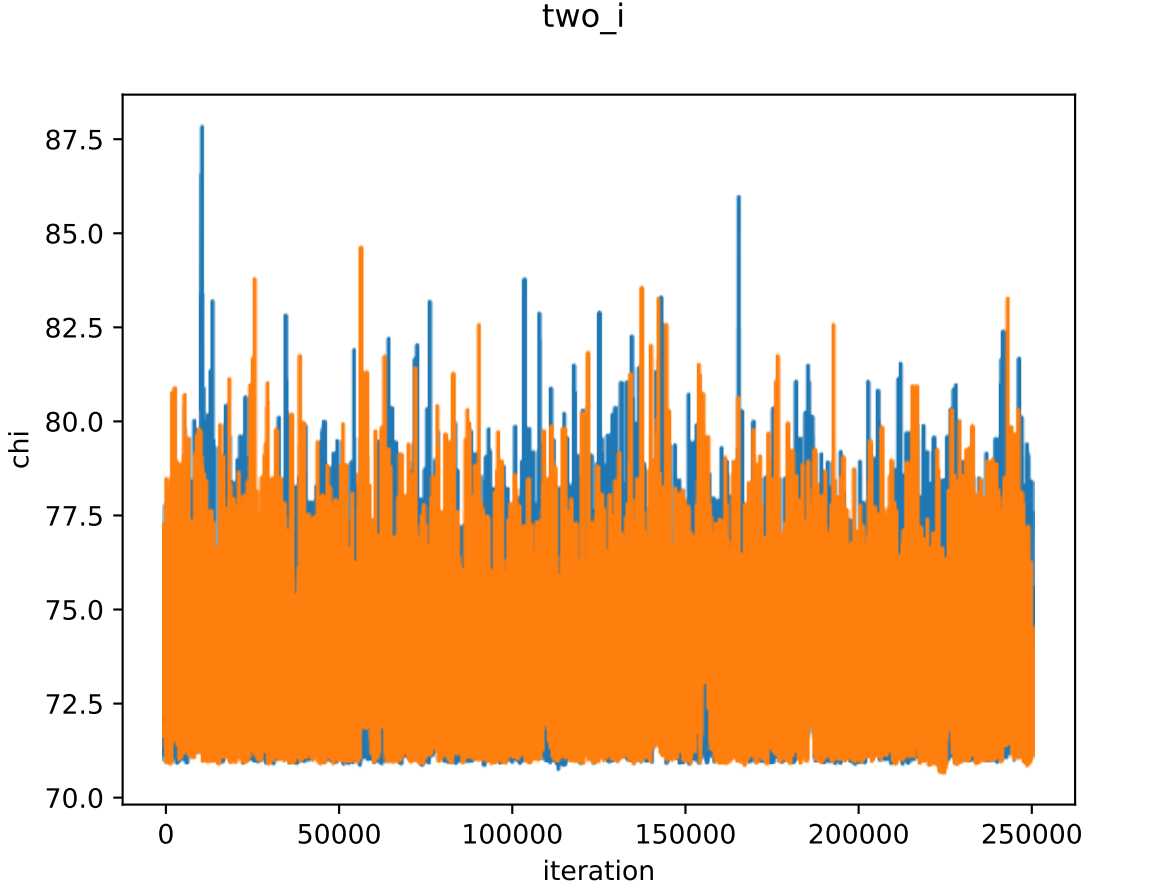

200000
150000
100000
50000
0
0.000 0.025 0.050 0.075 0.100 0.125 0.150 0.175
lam


140000
120000
100000
80000
60000
40000
20000
0
0
1
2
3
4
tau

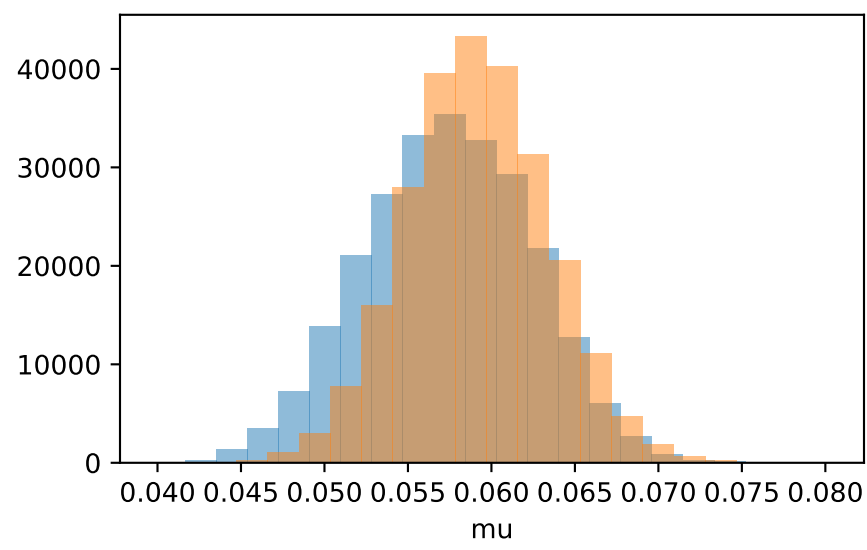
two_i

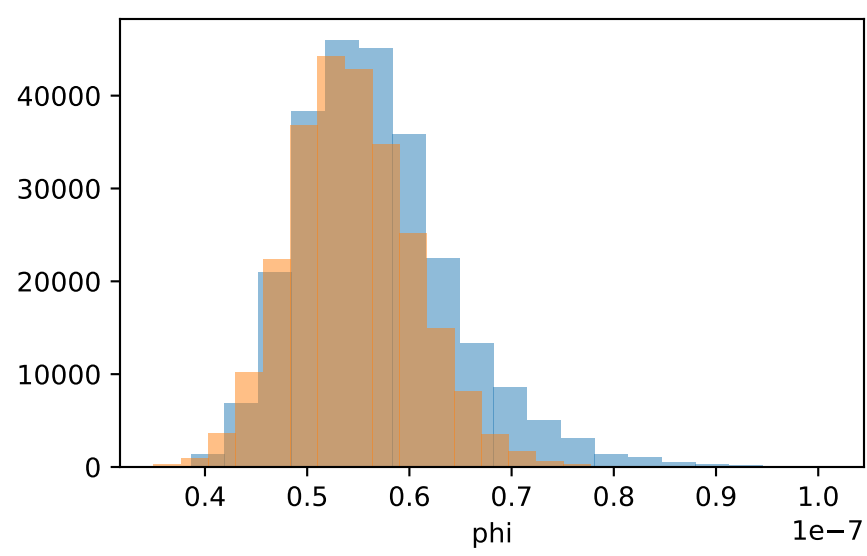


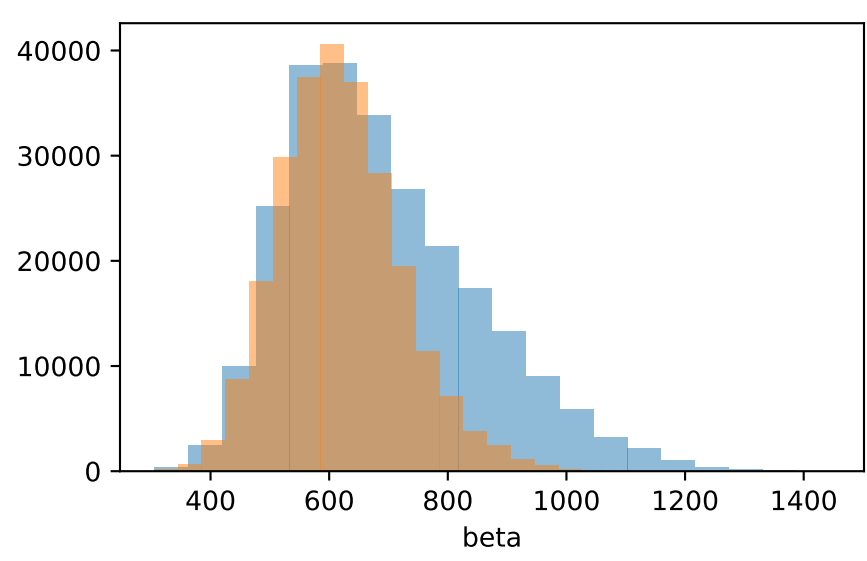

two_i
100000
80000
60000
40000
20000
0
frequency
70.0
72.5
75.0
77.5
80.0
82.5
85.0
87.5
chi

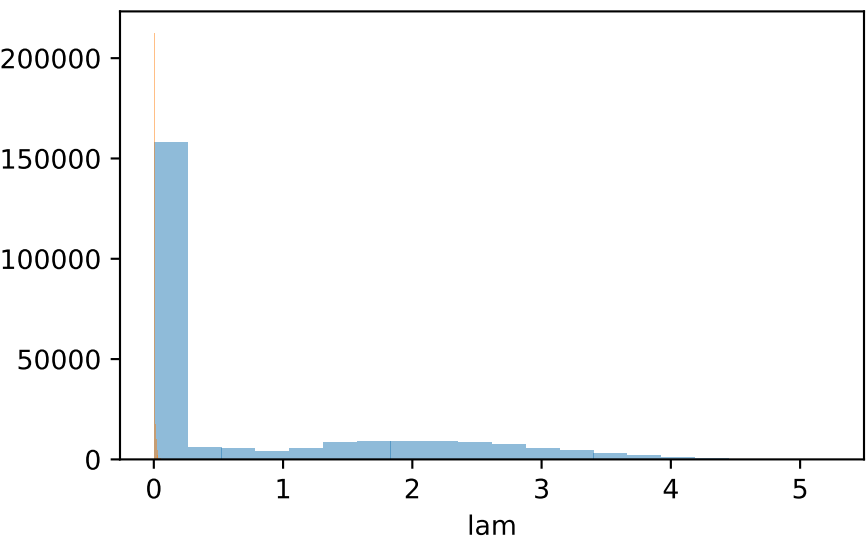

two_i
87.5
85.0
82.5
80.0
77.5
75.0
72.5
70.0
chi
0
50000
100000
150000
200000
250000
iteration

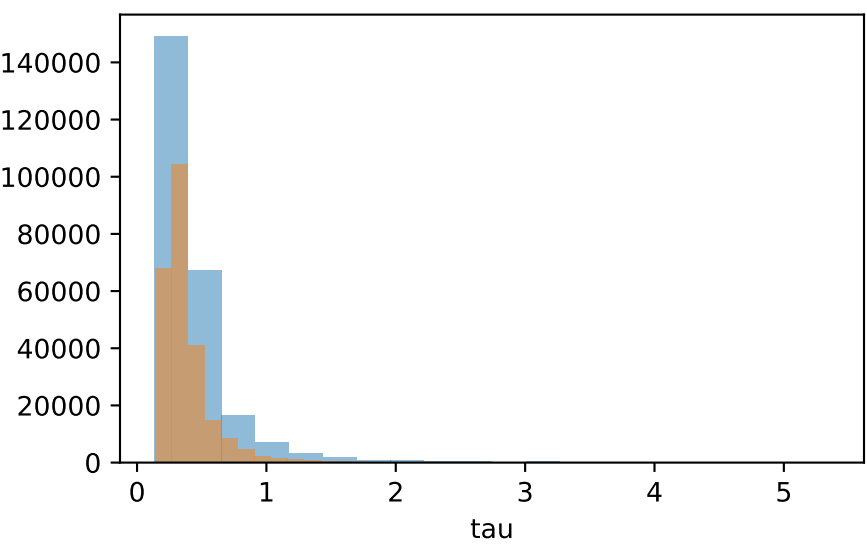
three_i


40000
30000
20000
10000
0
0.040 0.045 0.050 0.055 0.060 0.065 0.070 0.075 0.080
mu

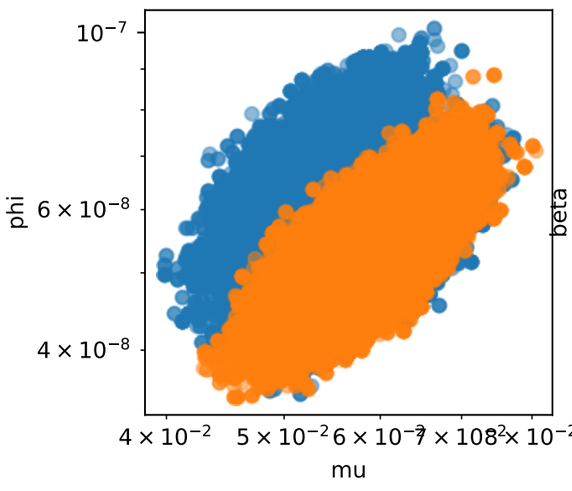

40000
30000
20000
10000
0
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1e−7
phi

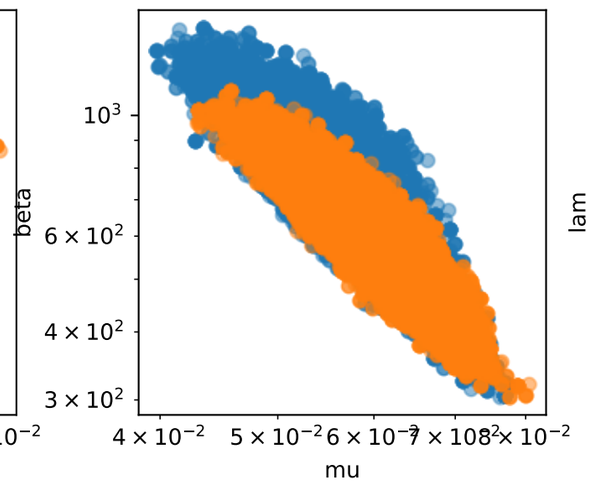

40000
30000
20000
10000
0
400
600
800
1000
1200
1400
beta

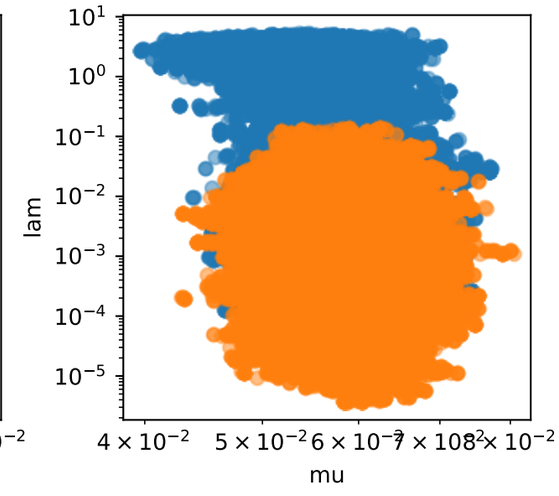

200000
150000
100000
50000
0
0
1
2
3
4
5
lam

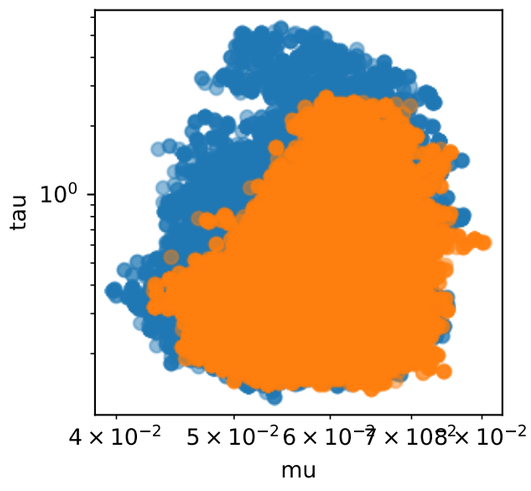

140000
120000
100000
80000
60000
40000
20000
0
0
1
2
3
4
5
tau

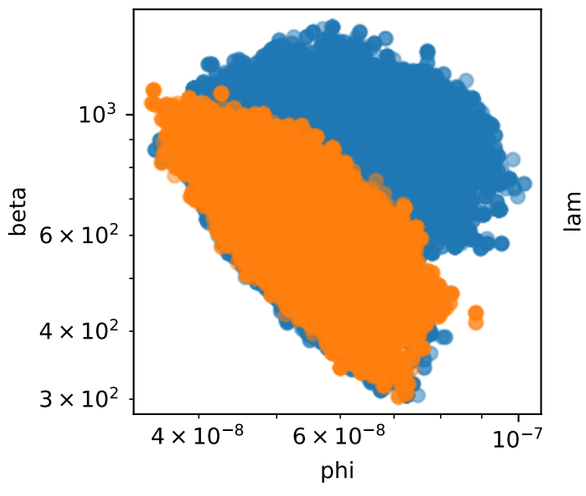
three_i

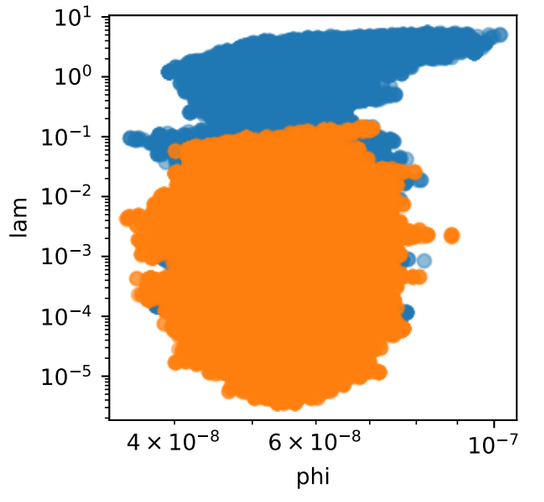

phi
mu

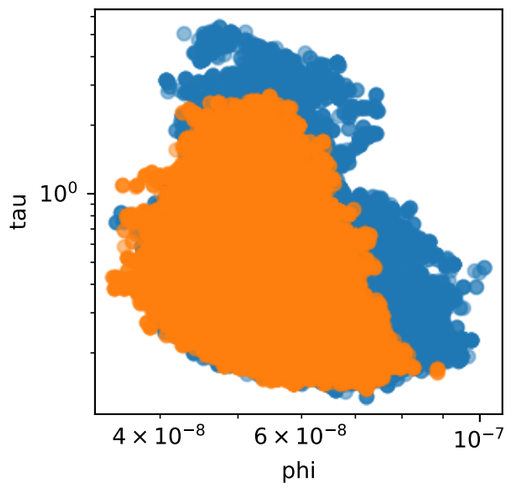

beta
mu

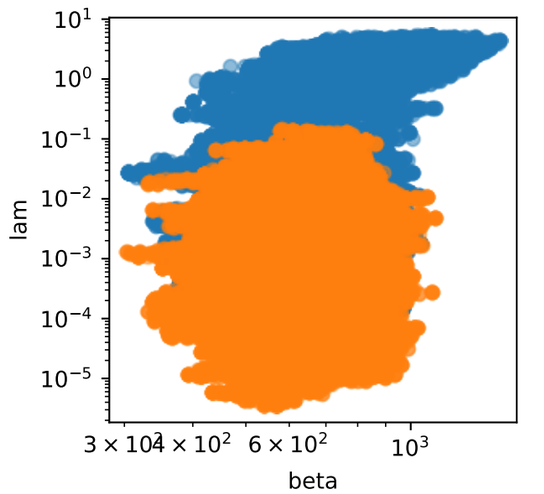

lam
mu

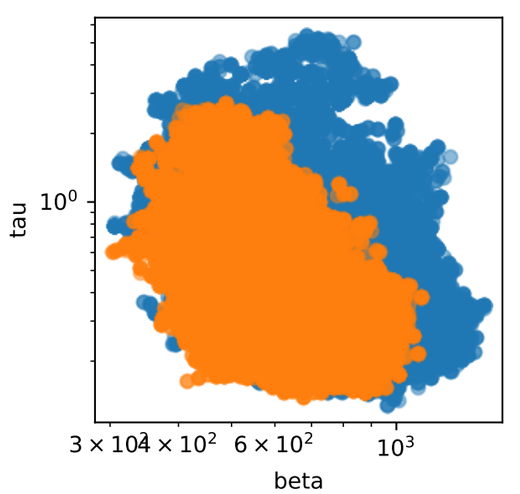

tau
mu

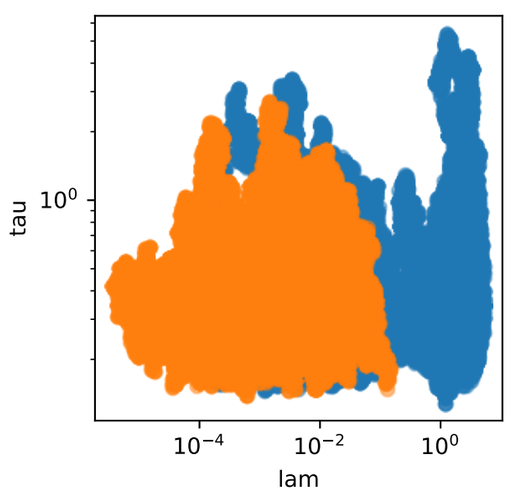

beta
phi

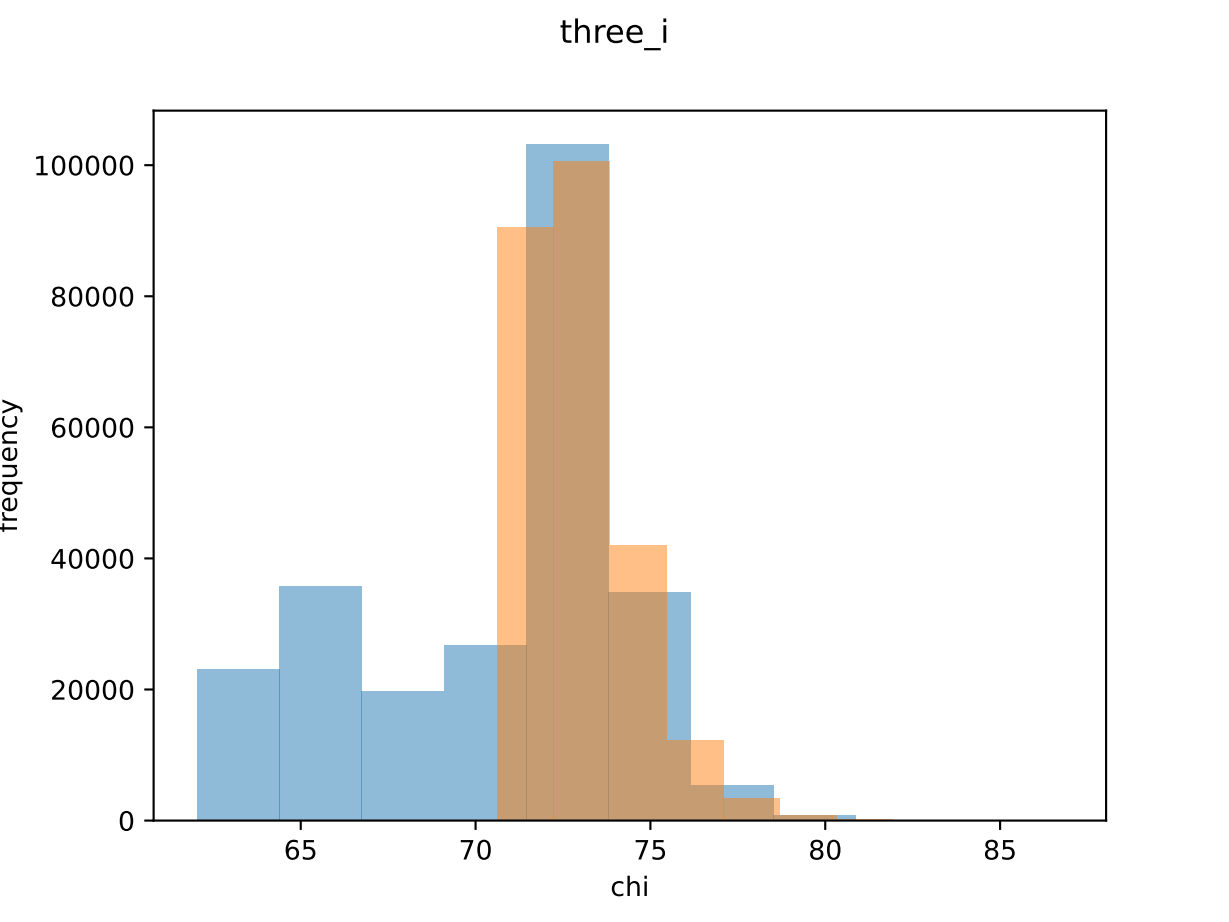

lam
phi

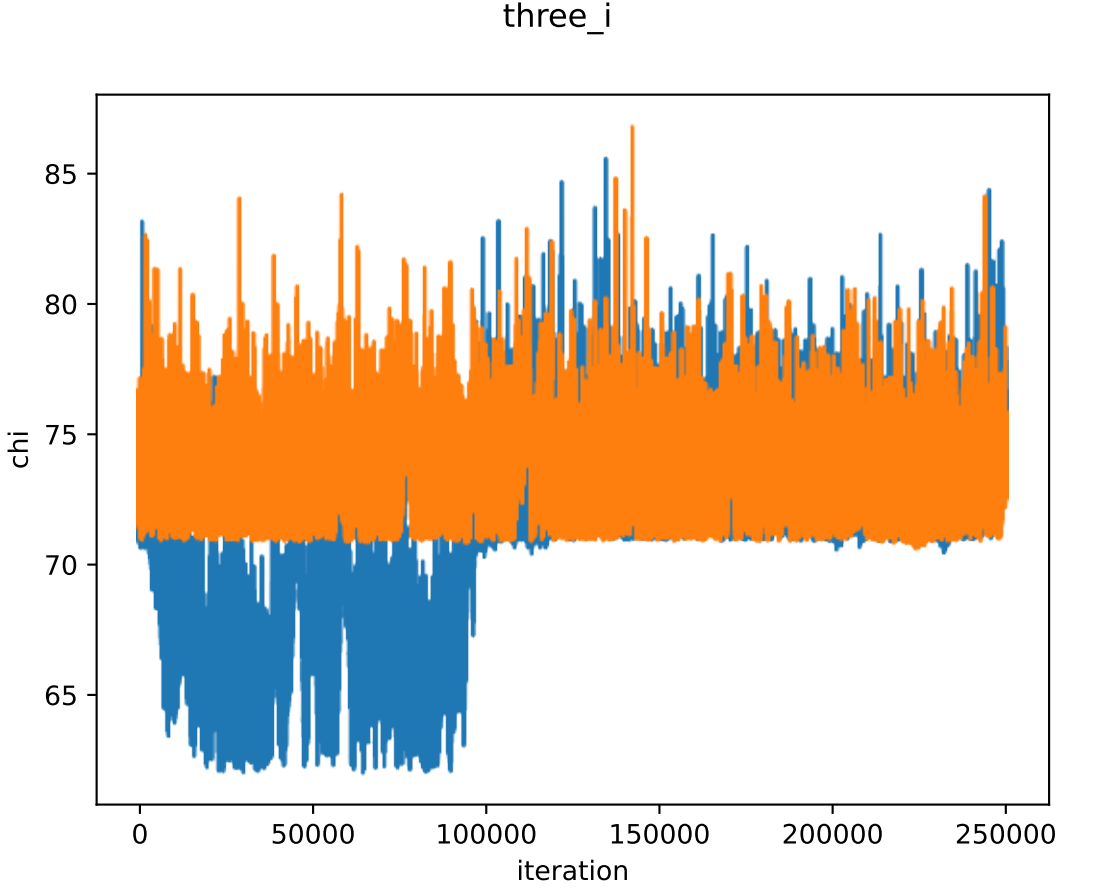

tau
phi


lam
beta

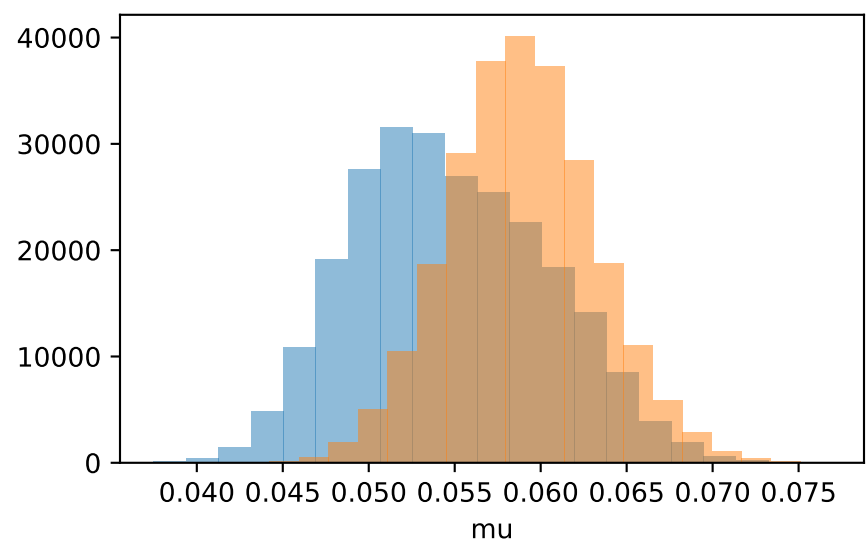

tau
beta


tau
lam


three_i
100000
80000
60000
40000
20000
0
frequency
65
70
75
80
85
chi


three_i
chi
iteration
85
80
75
70
65
0
50000
100000
150000
200000
250000

four_i


40000
30000
20000
10000
0
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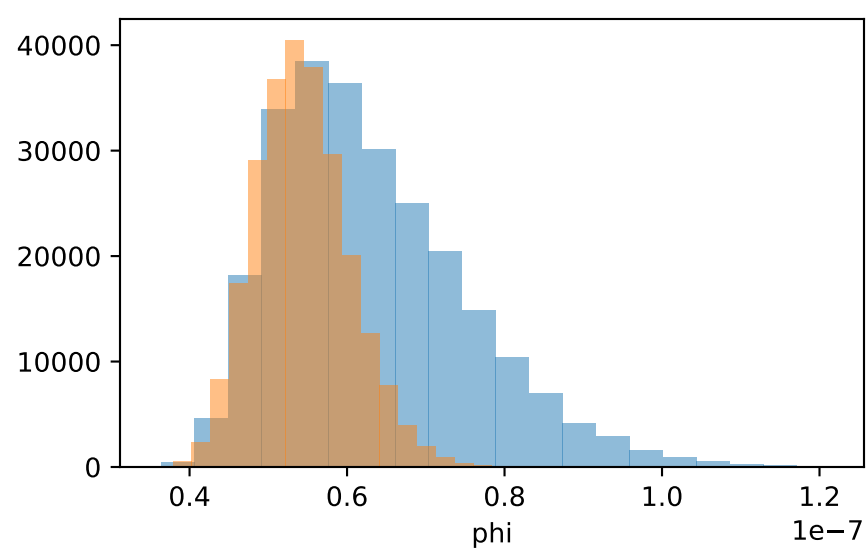
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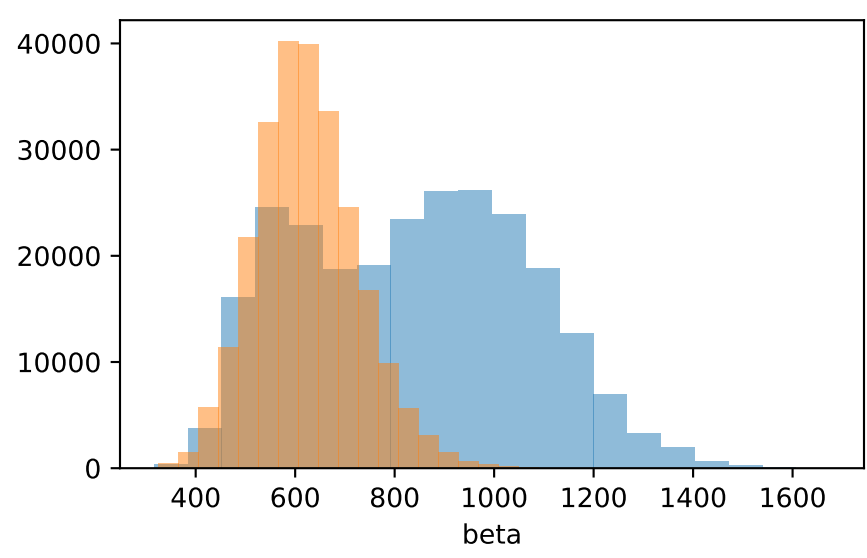
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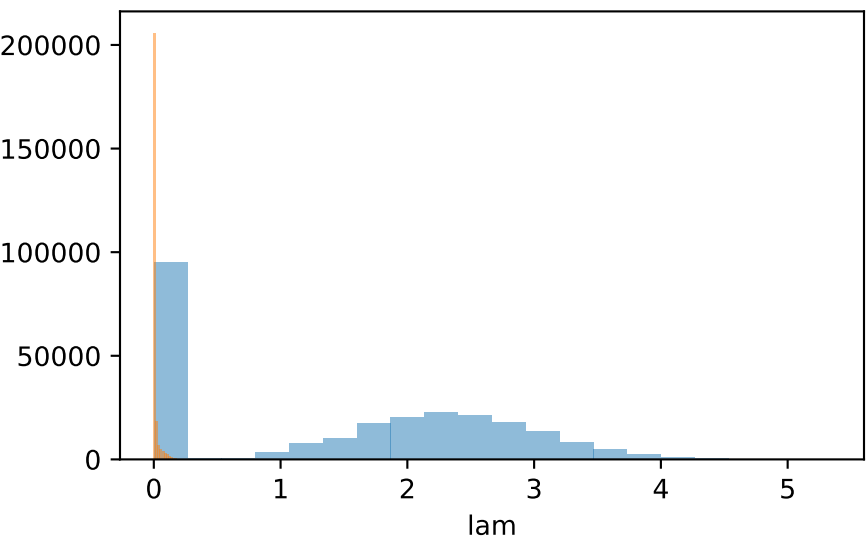
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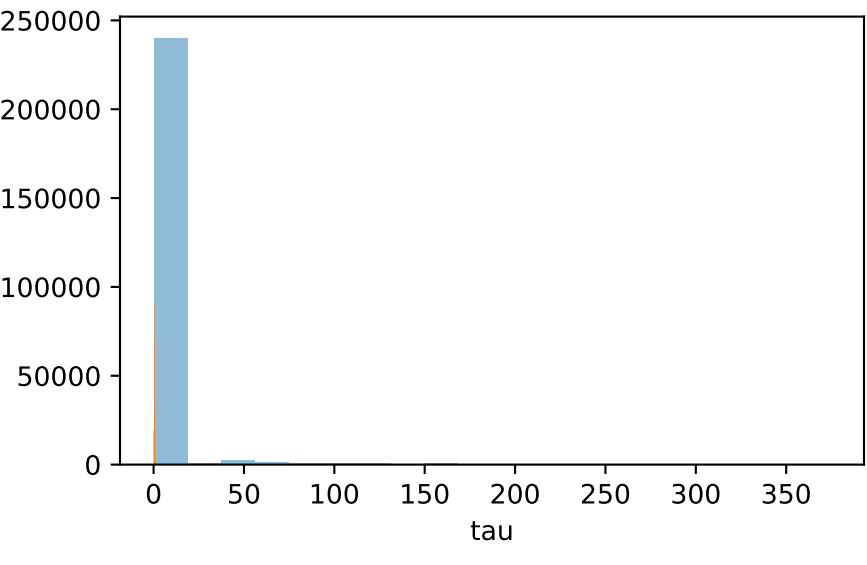
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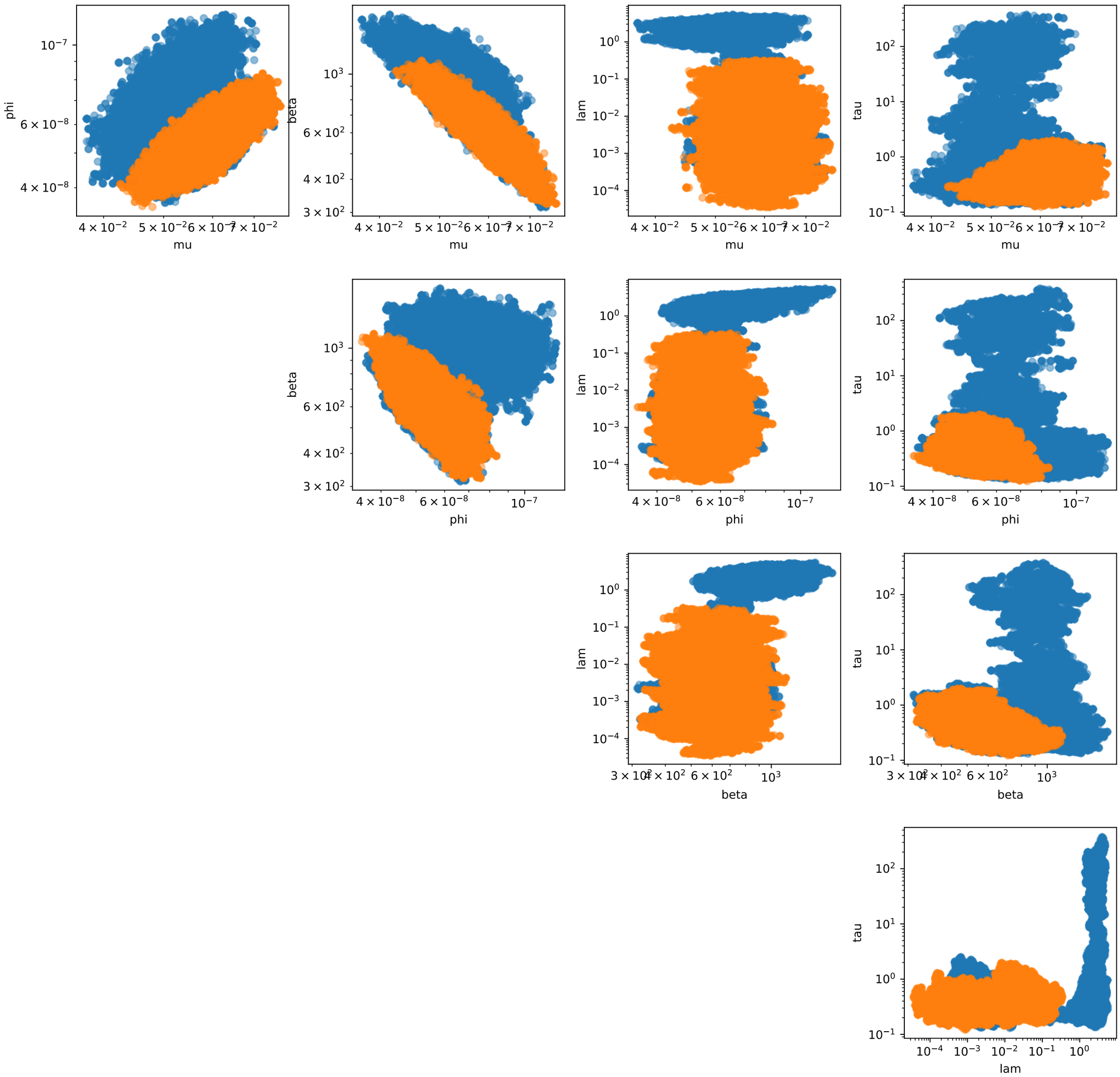

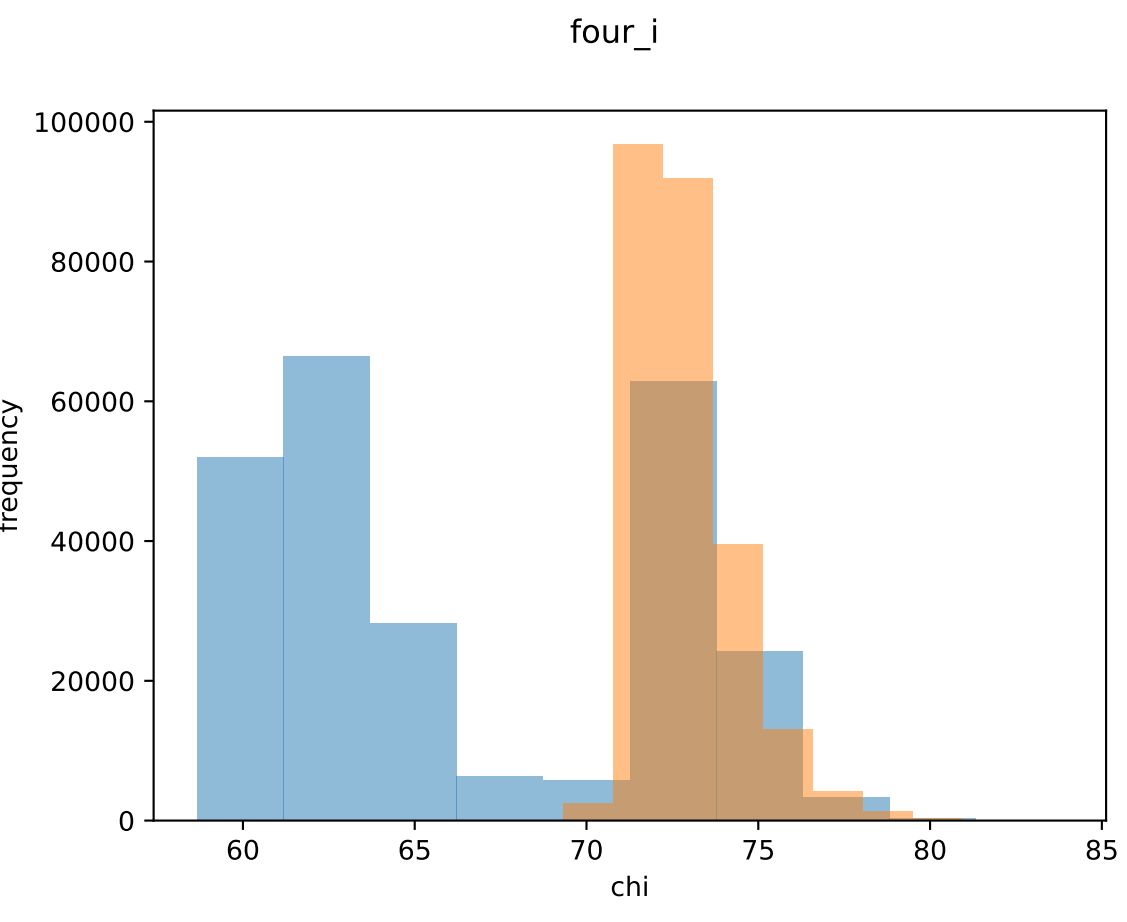
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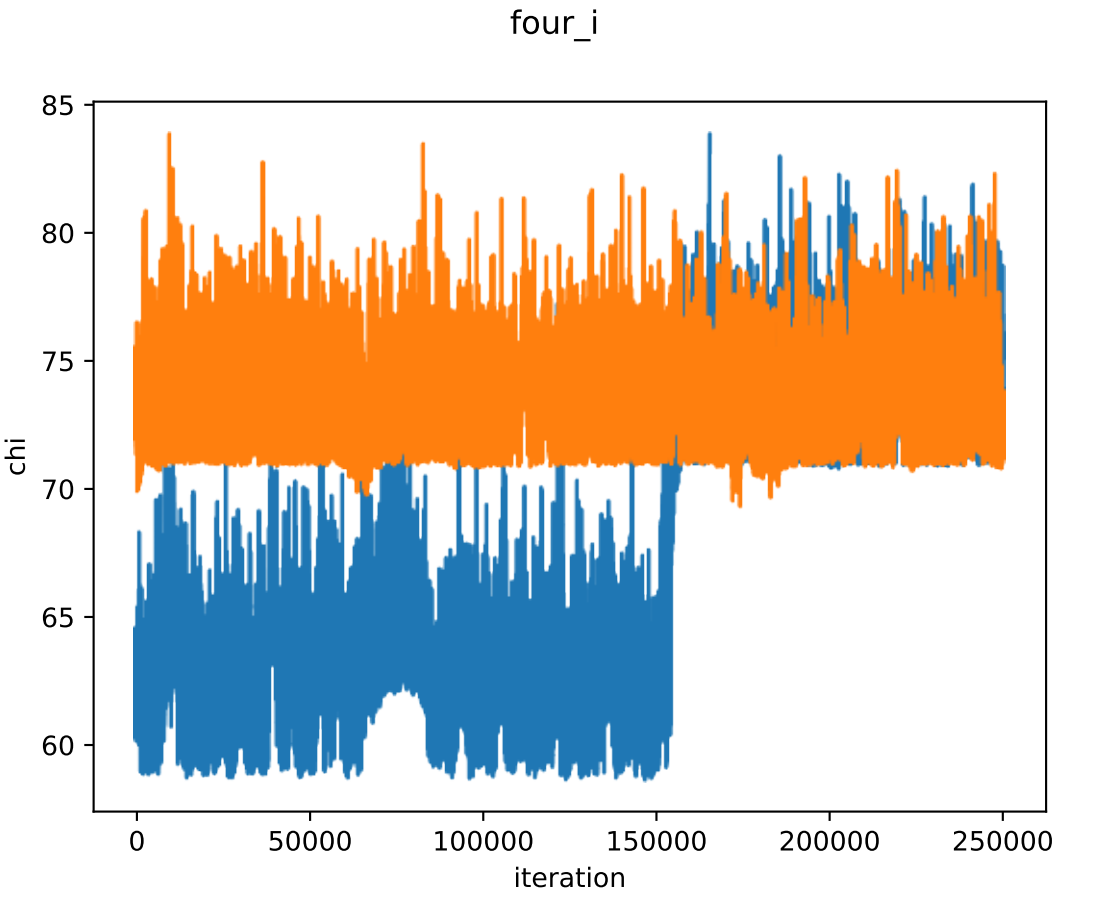
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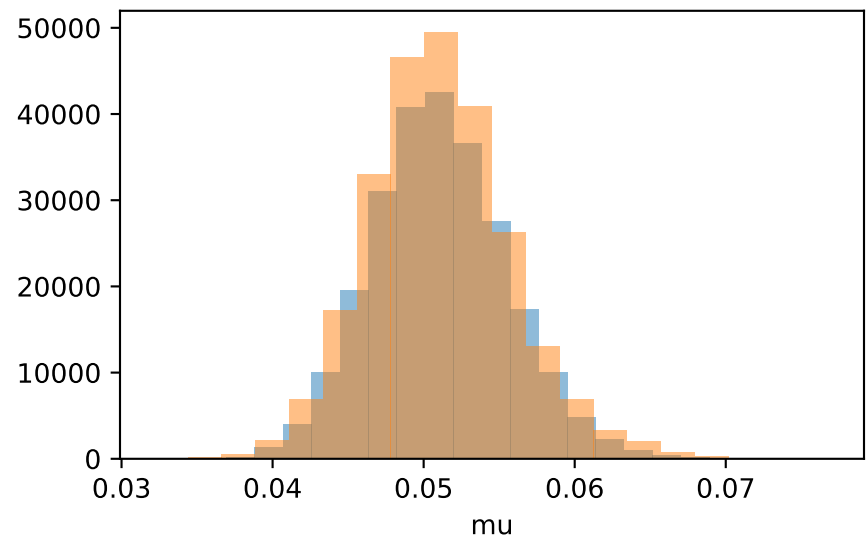
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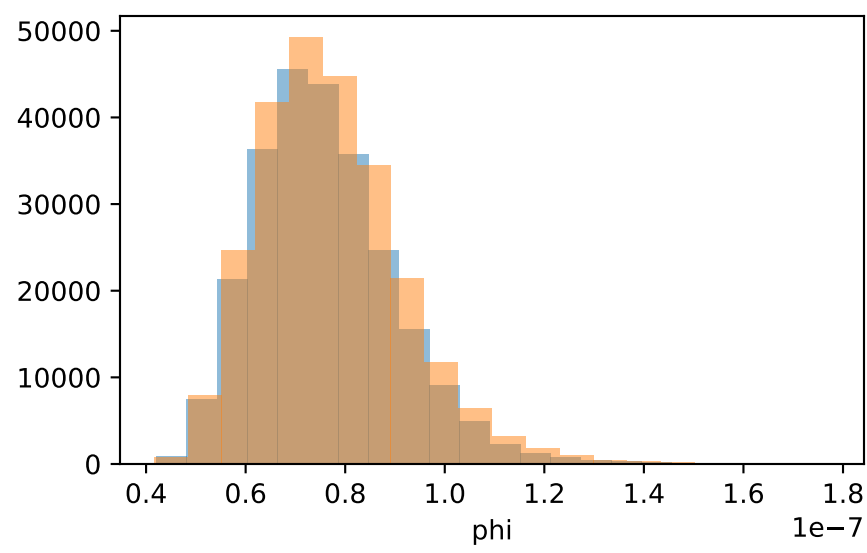
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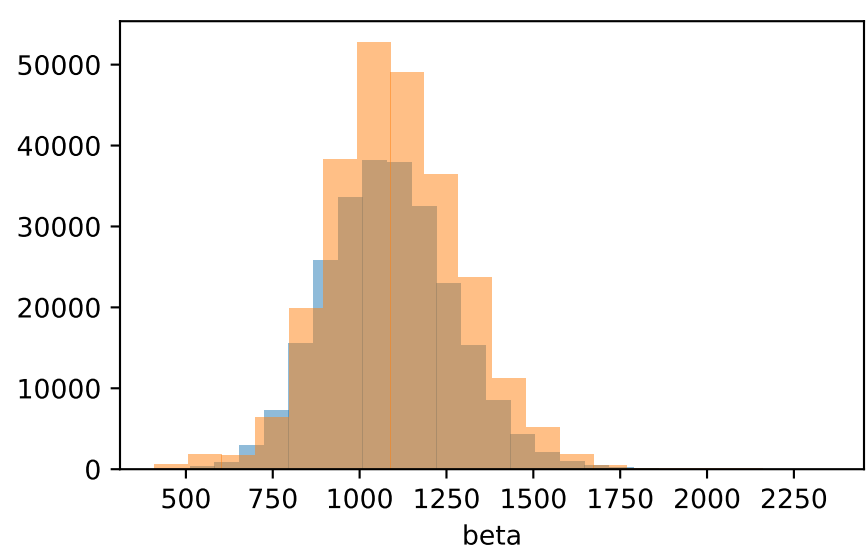
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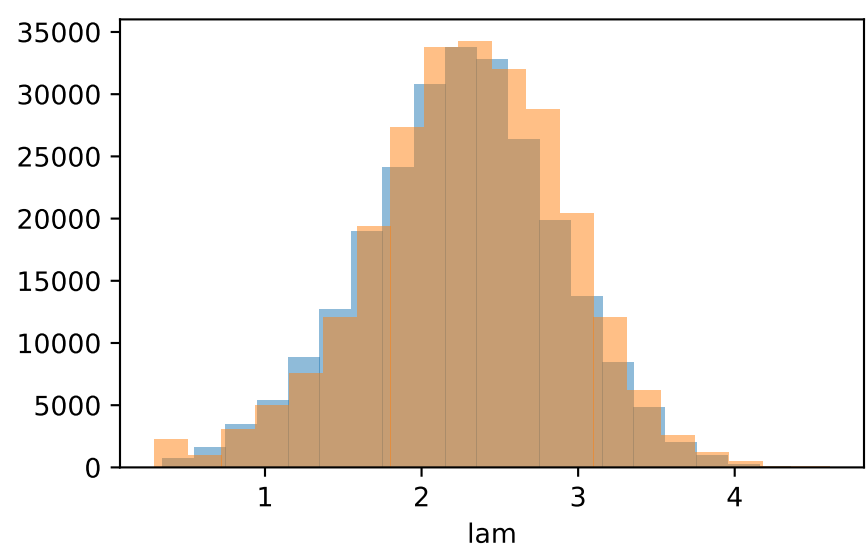
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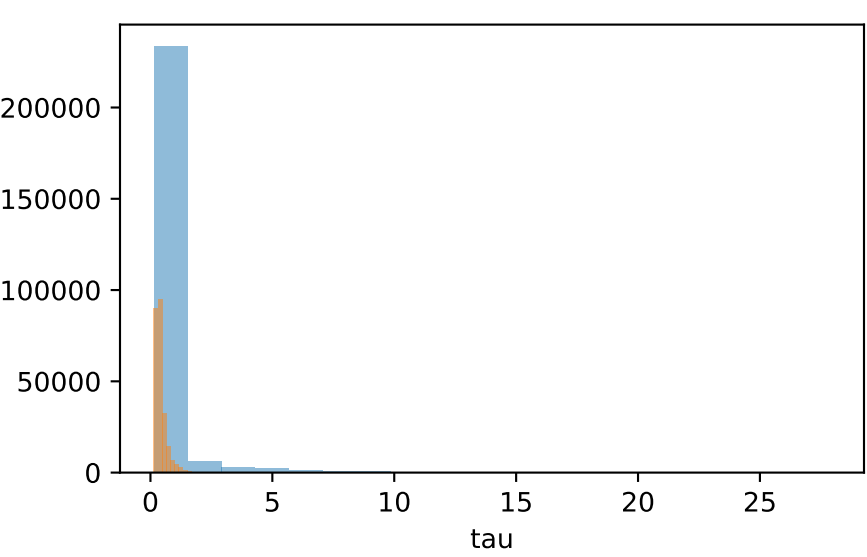
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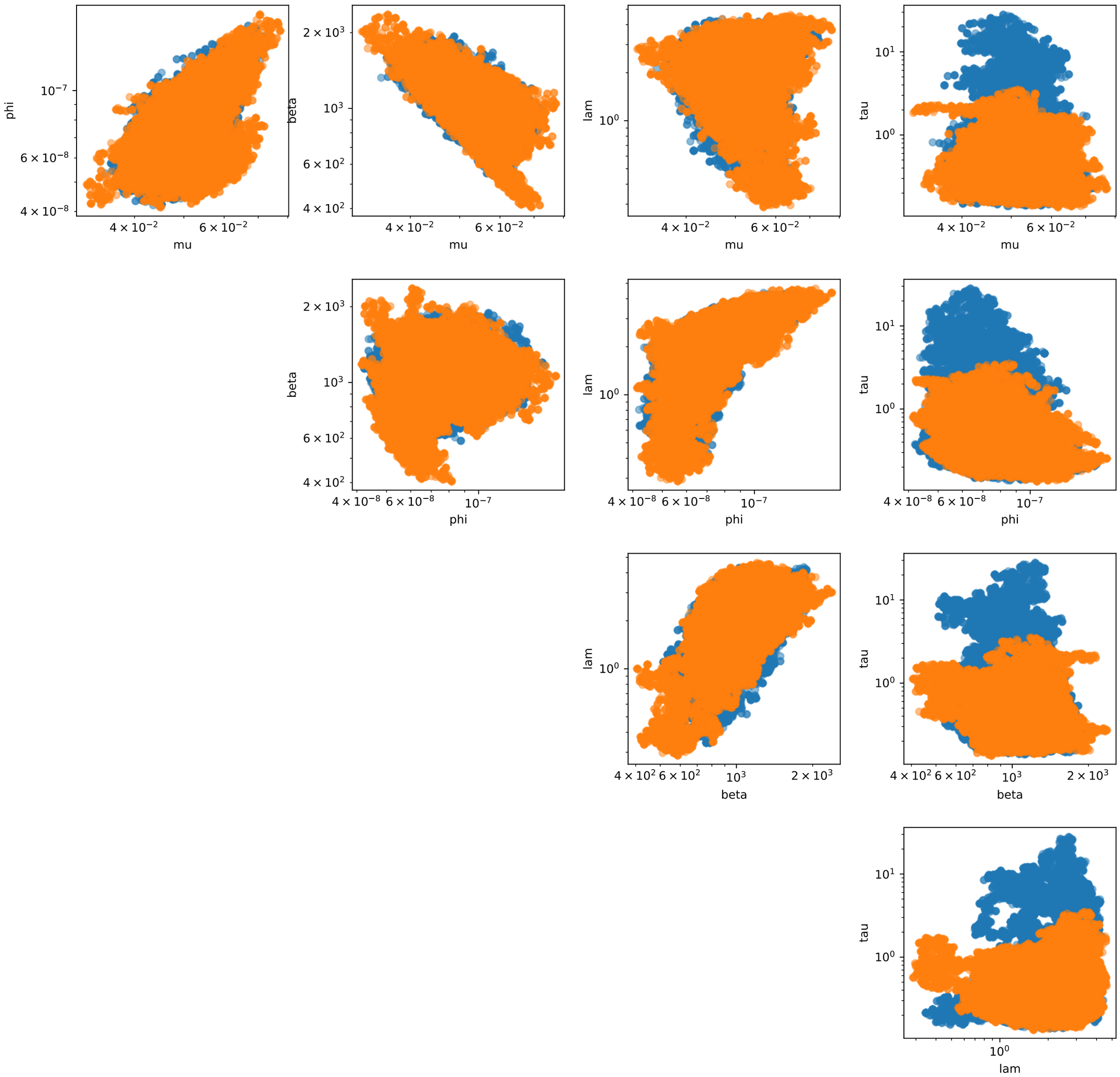

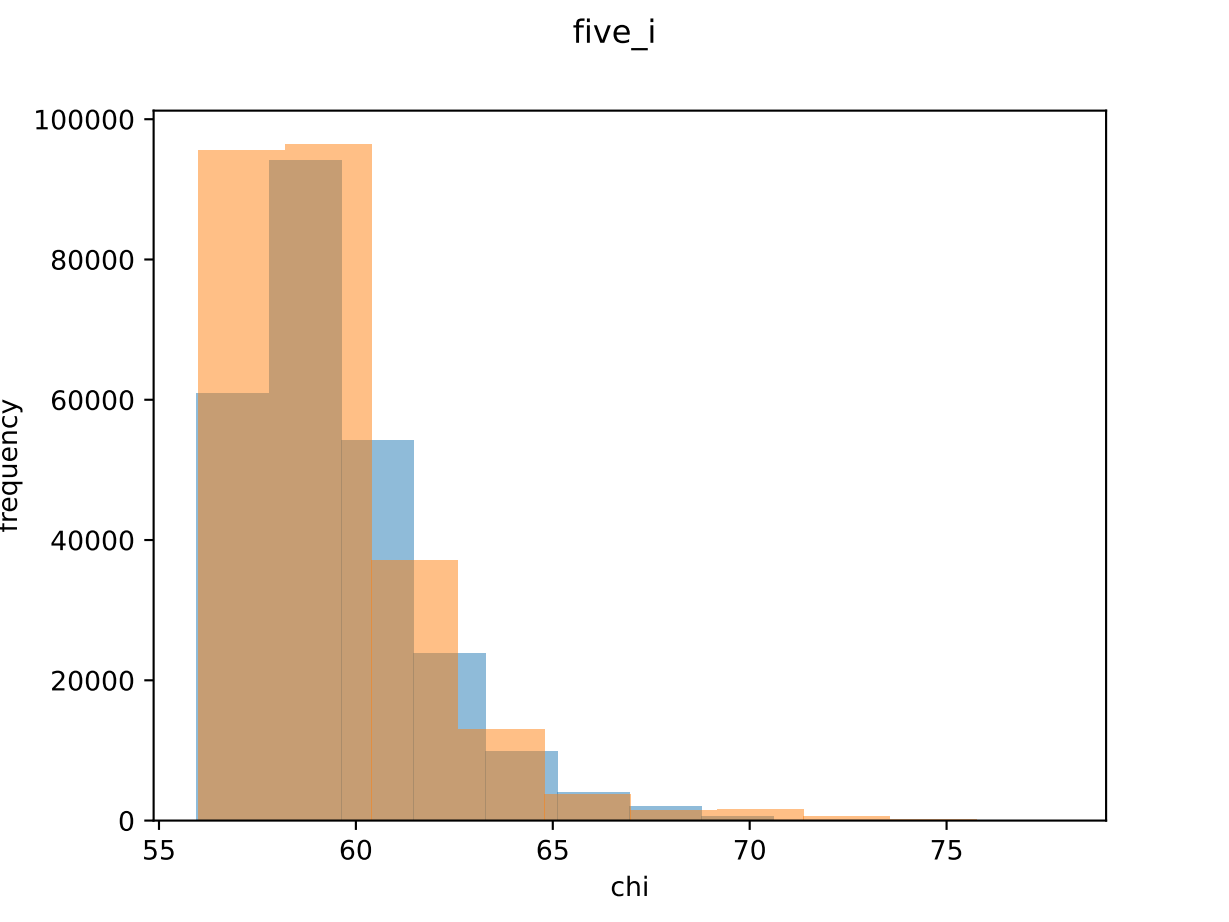
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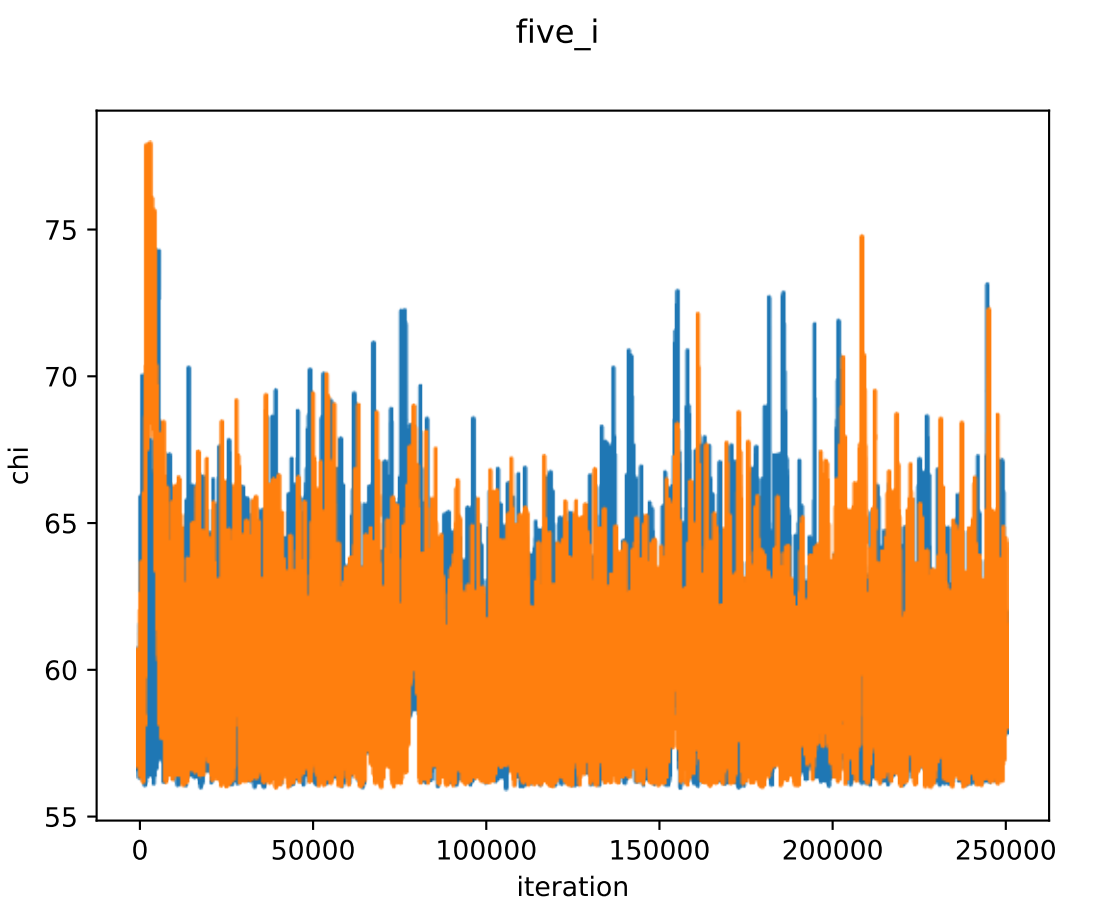
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