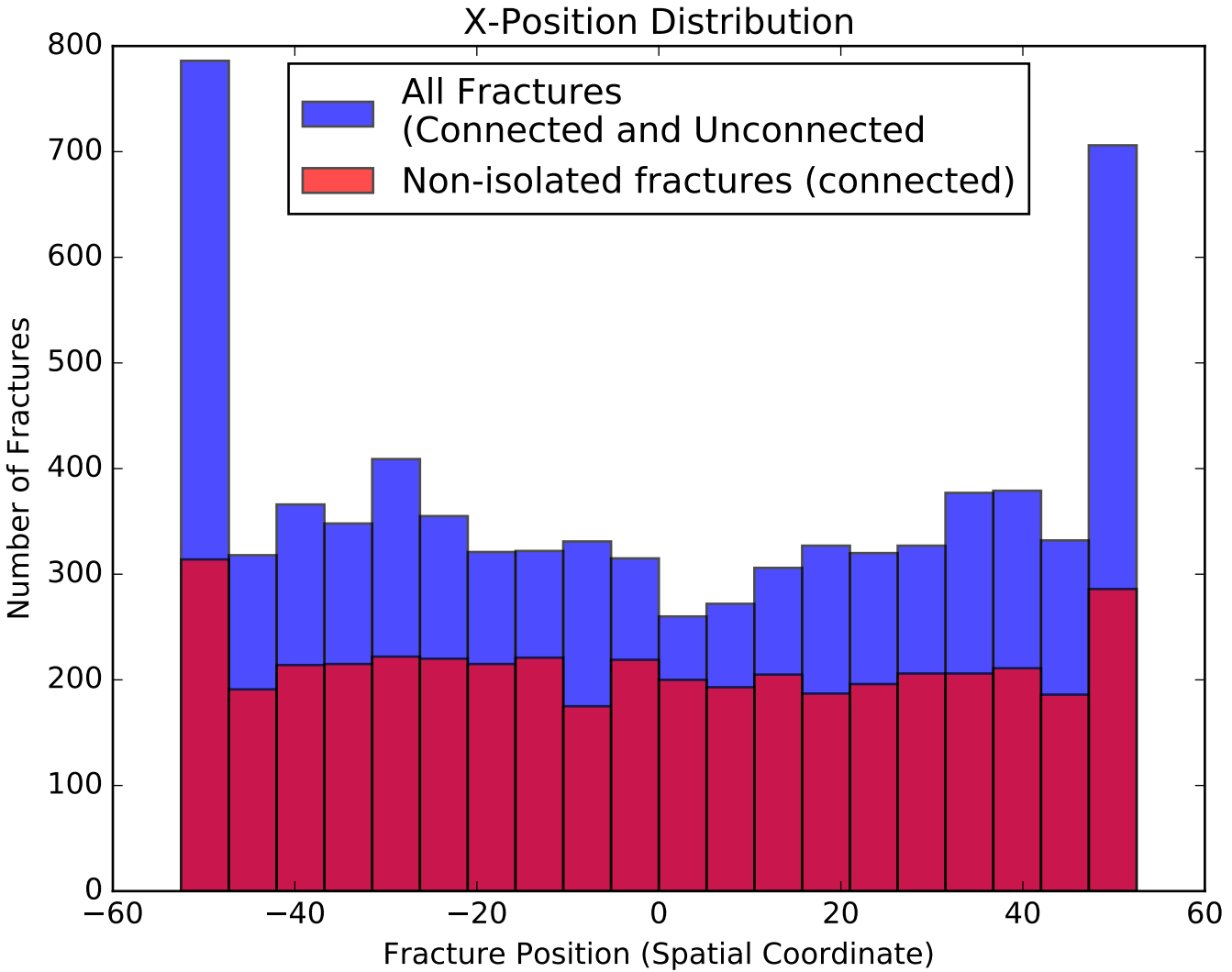
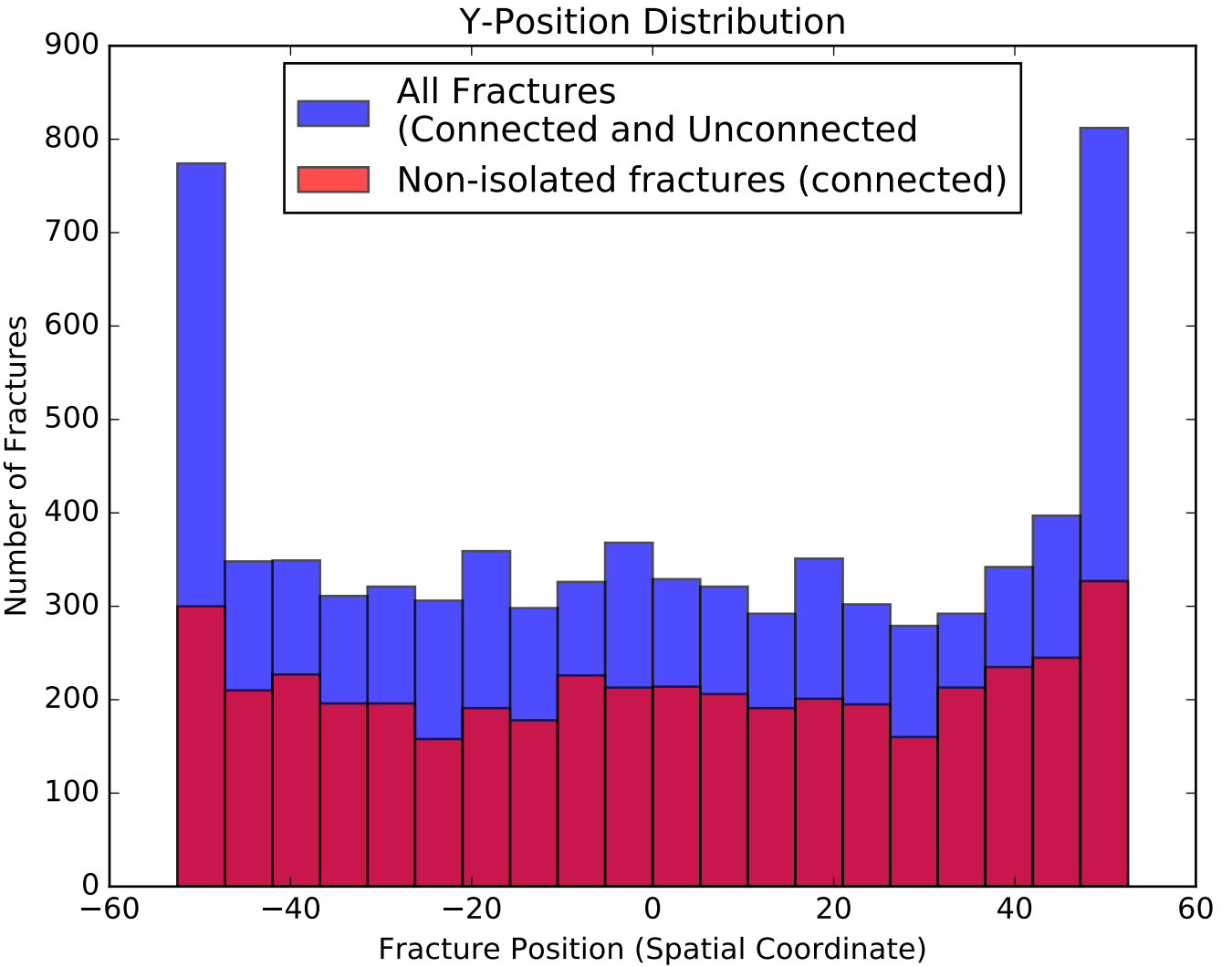
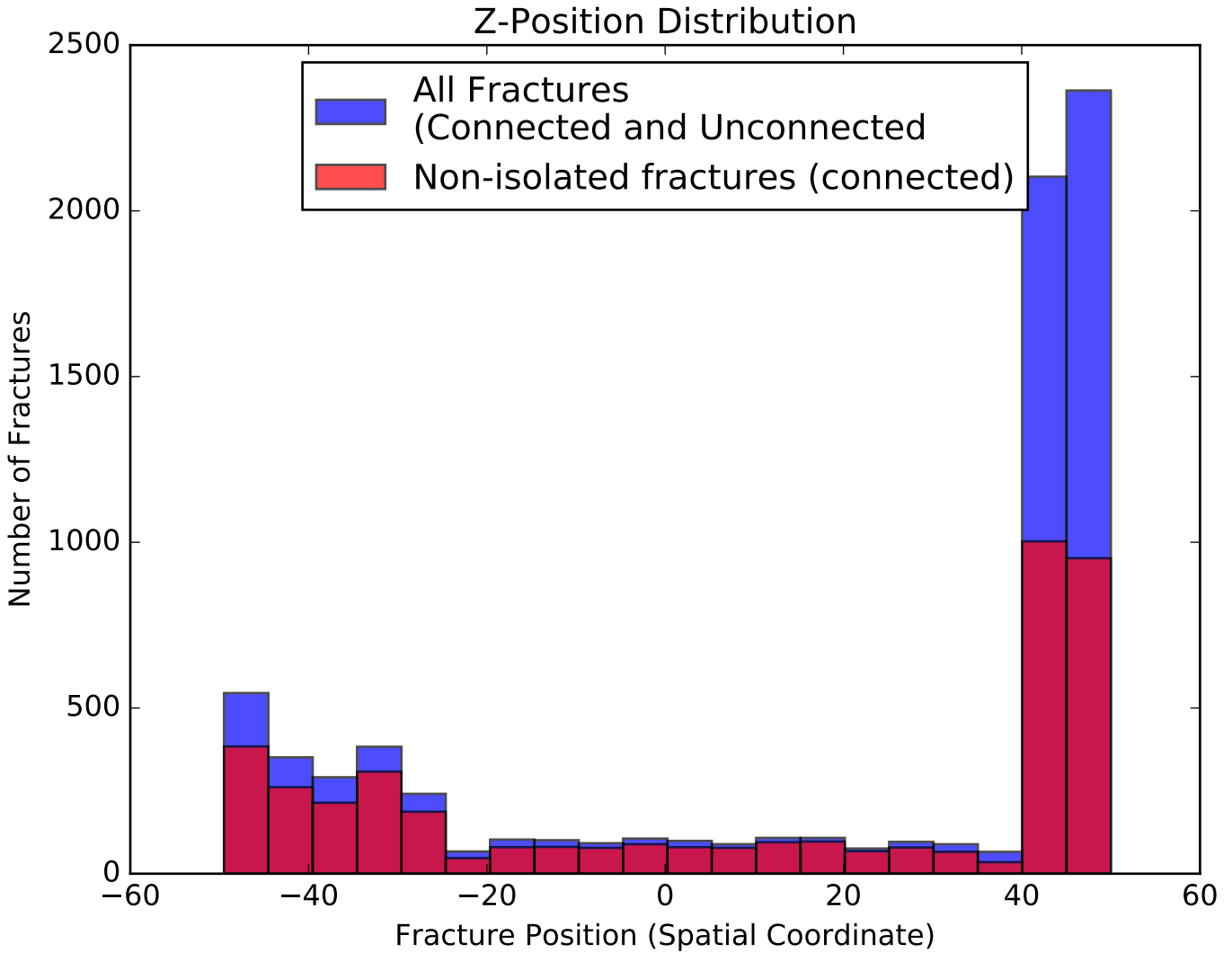

X-Position Distribution
All Fractures
(Connected and Unconnected
Non-isolated fractures (connected)
Number of Fractures
Fracture Position (Spatial Coordinate)
800
700
600
500
400
300
200
100
0
−60
−40
−20
0
20
40
60


Y-Position Distribution
All Fractures
(Connected and Unconnected
Non-isolated fractures (connected)
Number of Fractures
Fracture Position (Spatial Coordinate)
900
800
700
600
500
400
300
200
100
0
−60
−40
−20
0
20
40
60


Z-Position Distribution
All Fractures
(Connected and Unconnected
Non-isolated fractures (connected)
Number of Fractures
Fracture Position (Spatial Coordinate)
2500
2000
1500
1000
500
0
−60
−40
−20
0
20
40
60

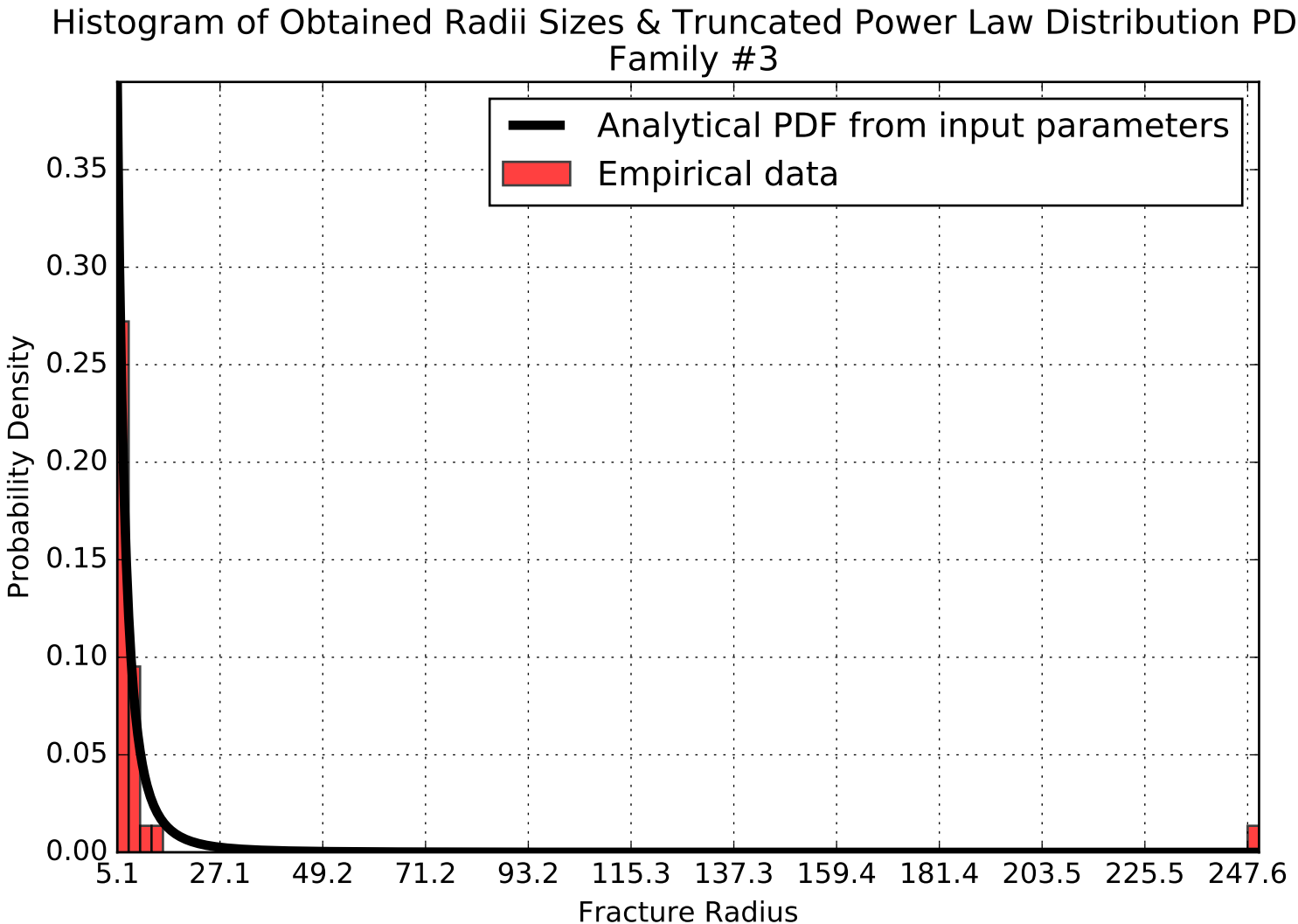
Rectanglular Family 1:
Global Family 1
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.44205
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 89.12 Degrees
Phi: 27.35 Degrees
Kappa: 18.34
Layer: 1 {40, 50}
Distribution: Constant
Radius: 5m
Family Insertion Probability: 0.166667

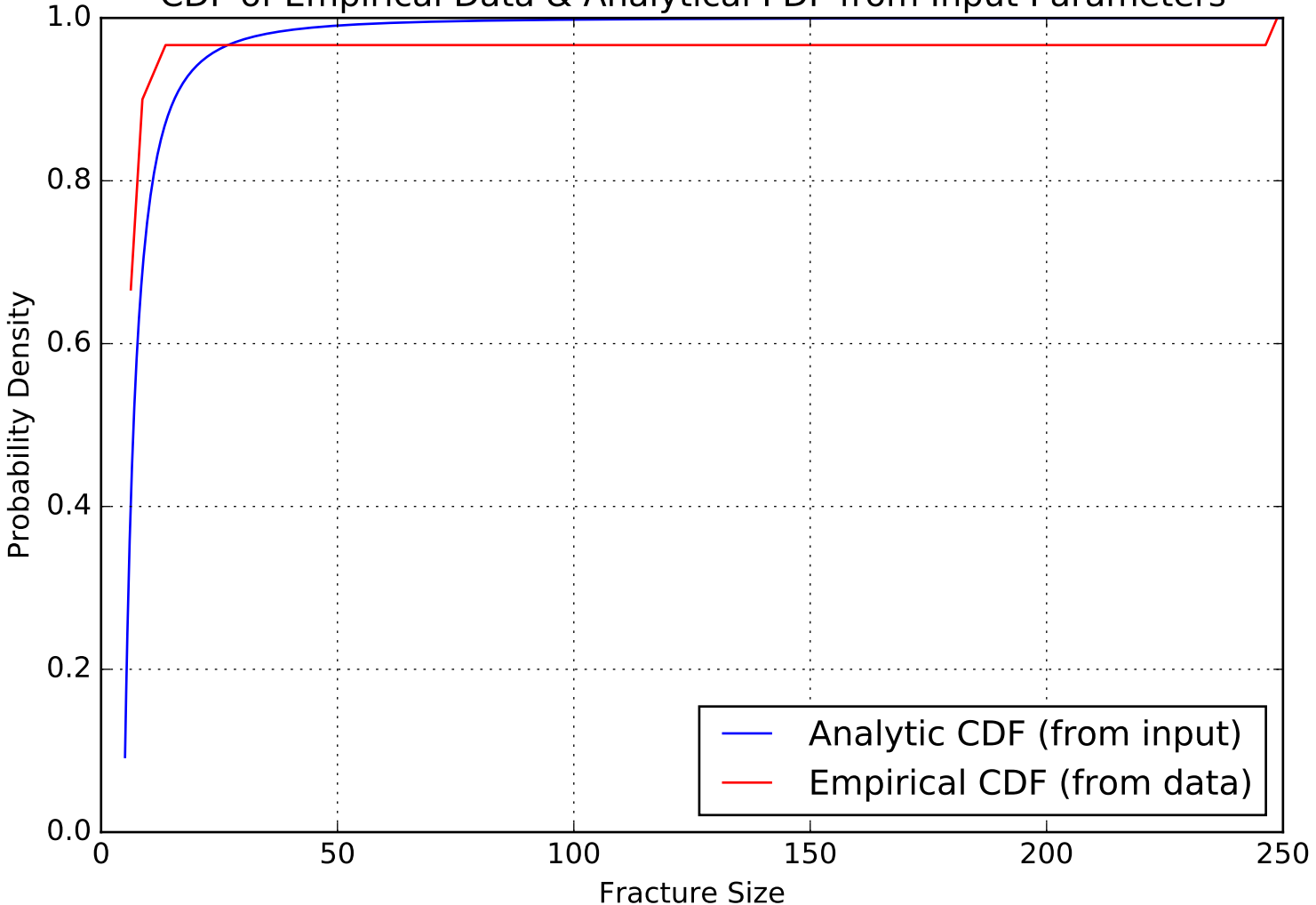
Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

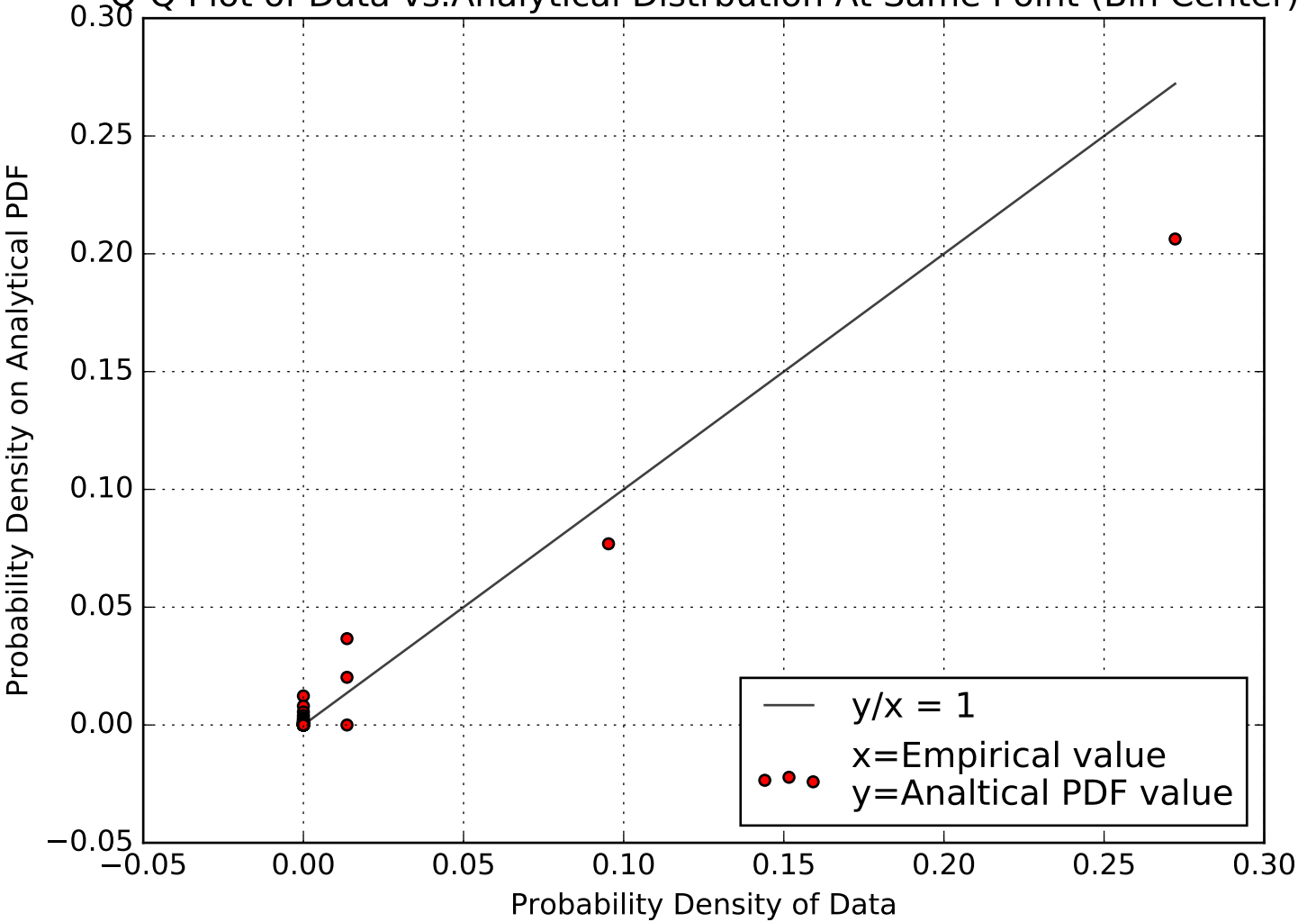
Rectanglular Family 2:
Global Family 2
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.1149
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 350.48 Degrees
Phi: 28.06 Degrees
Kappa: 26.24
Layer: 1 {40, 50}
Distribution: Constant
Radius: 5m
Family Insertion Probability: 0.166667

Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

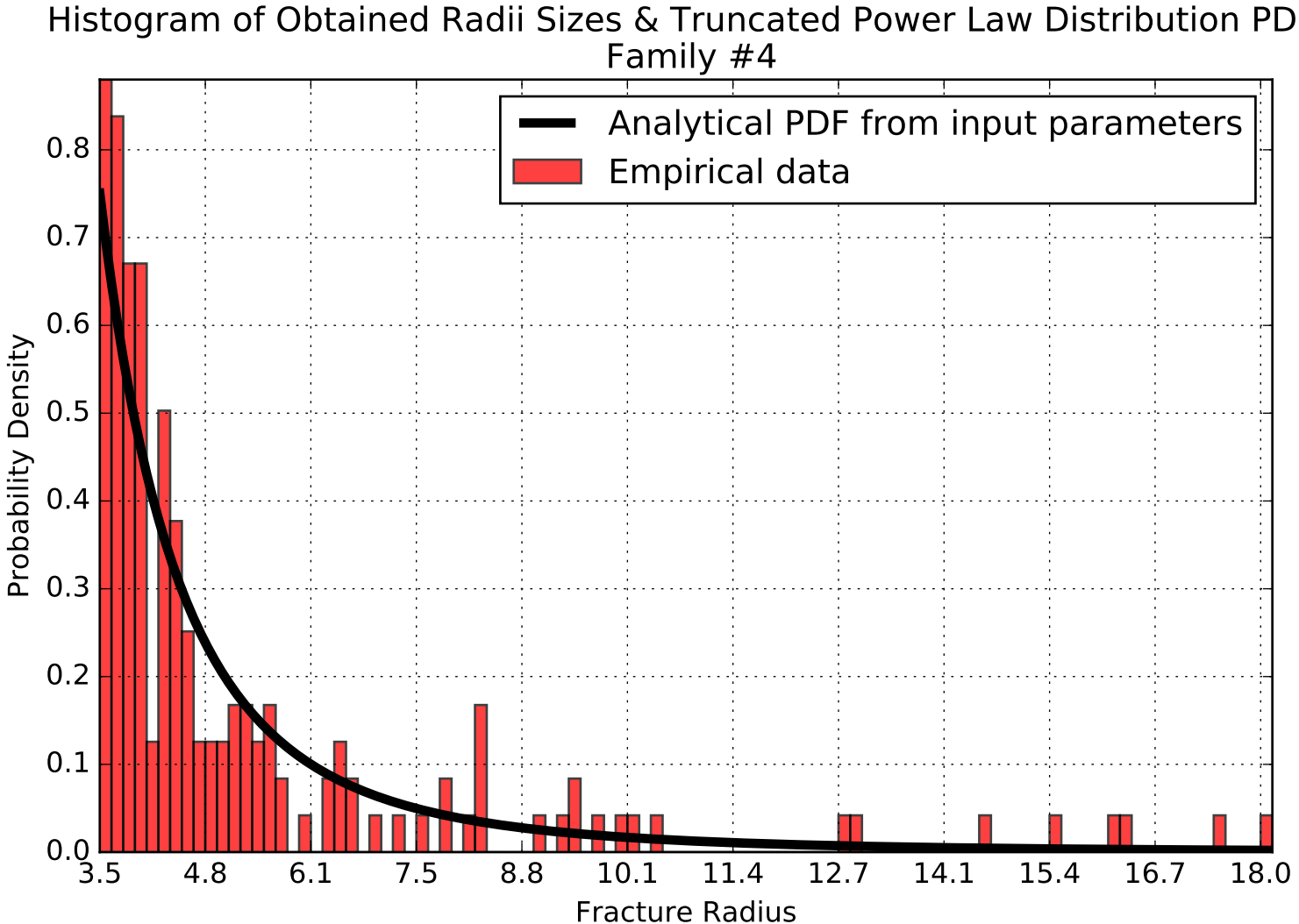
Rectanglular Family 3:
Global Family 3
Number of Vertices: 4
Aspect Ratio: 1
P32 (Fracture Intensity) Target: 0.03536
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 19.39 Degrees
Phi: 53.21 Degrees
Kappa: 35
Layer: 1 {40, 50}
Distribution: Truncated Power-Law
Alpha: 2
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 0.166667

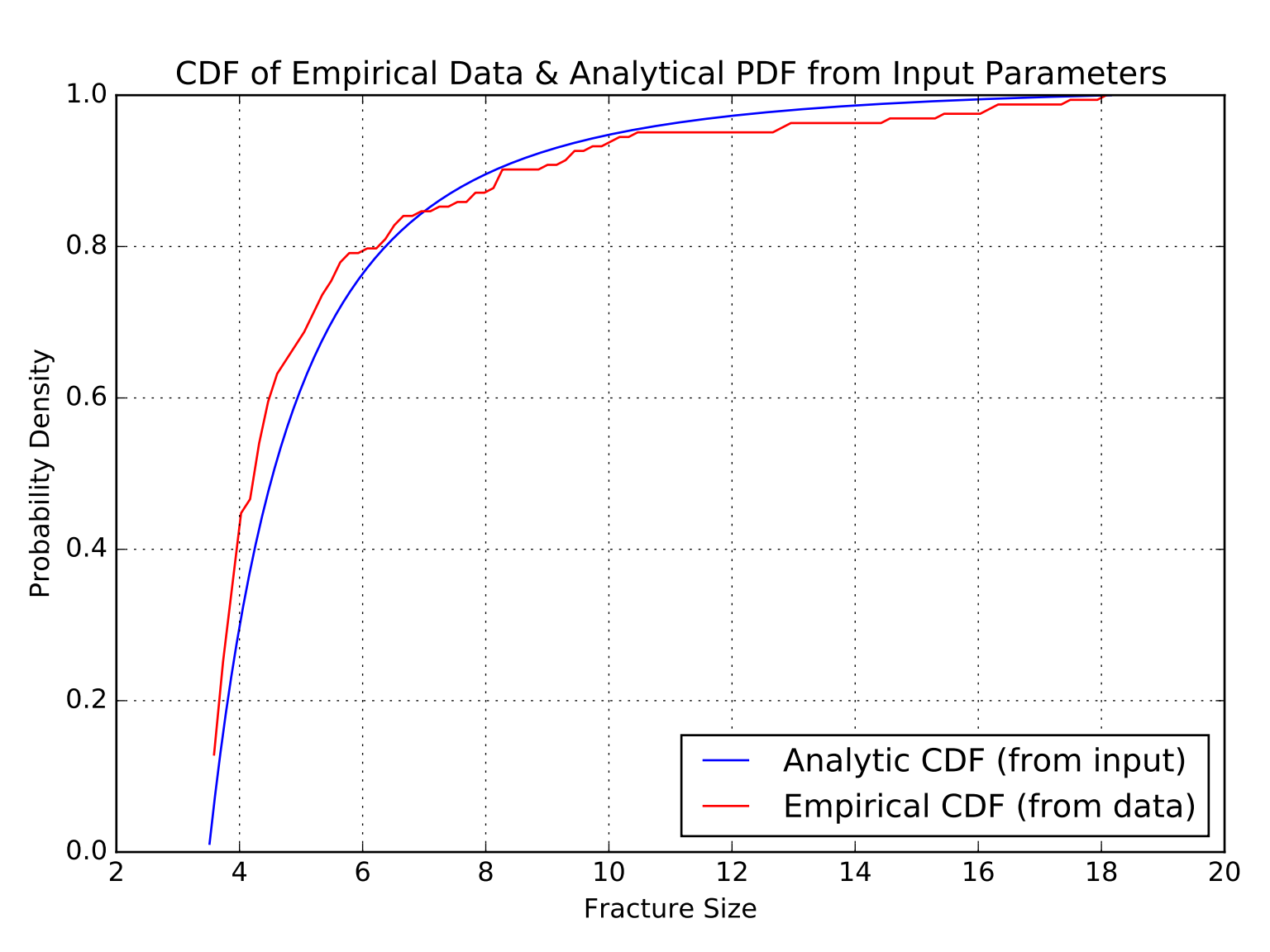

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF
Family #3
Analytical PDF from input parameters
Empirical data
Probability Density
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
5.1
27.1
49.2
71.2
93.2
115.3
137.3
159.4
181.4
203.5
225.5
247.6
Fracture Radius

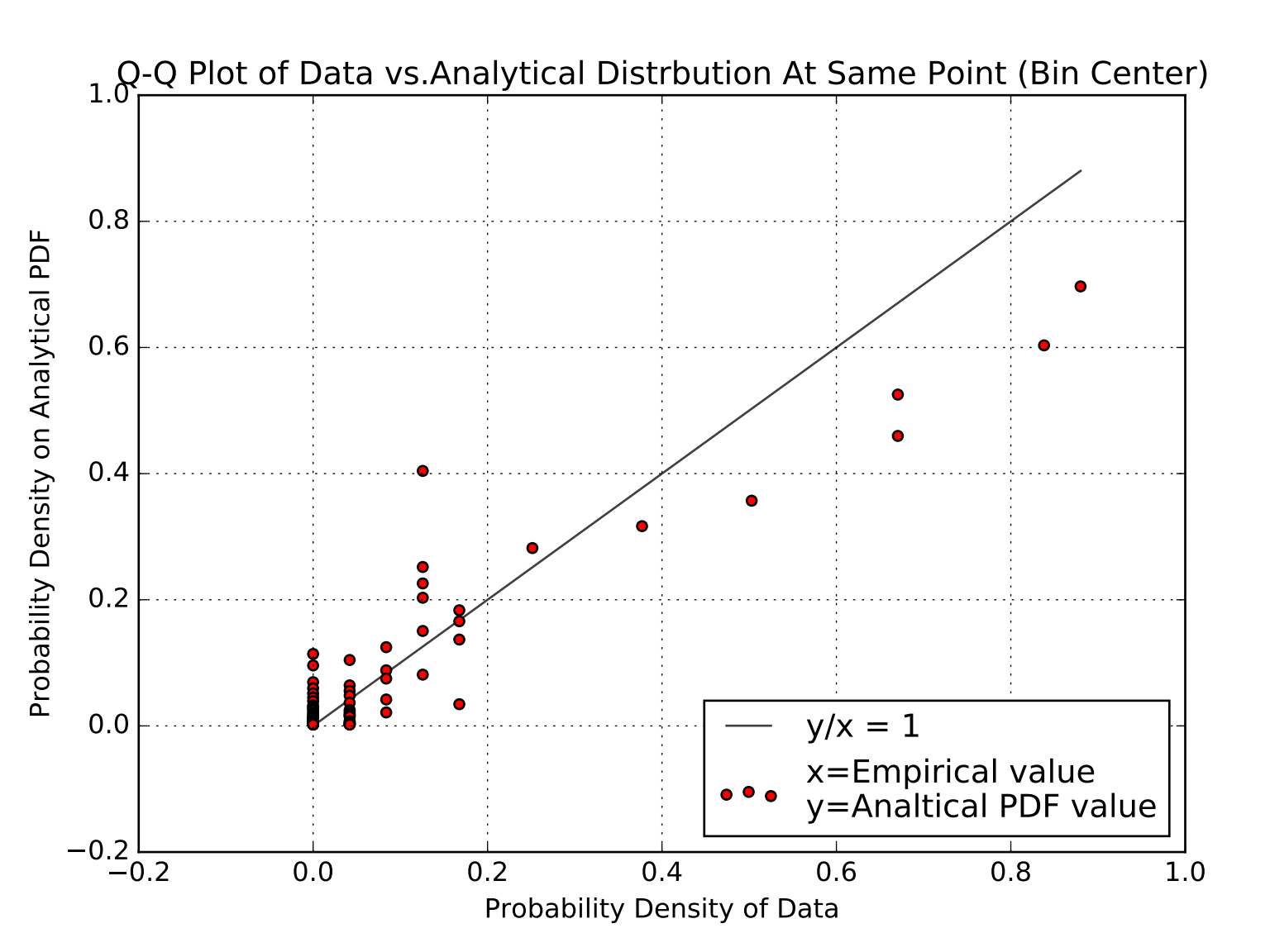

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
250
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
0.30
0.25
0.20
0.15
0.10
0.05
0.00
−0.05
−0.05
0.00
0.05
0.10
0.15
0.20
0.25
0.30
y/x = 1
x=Empirical value
y=Analtical PDF value

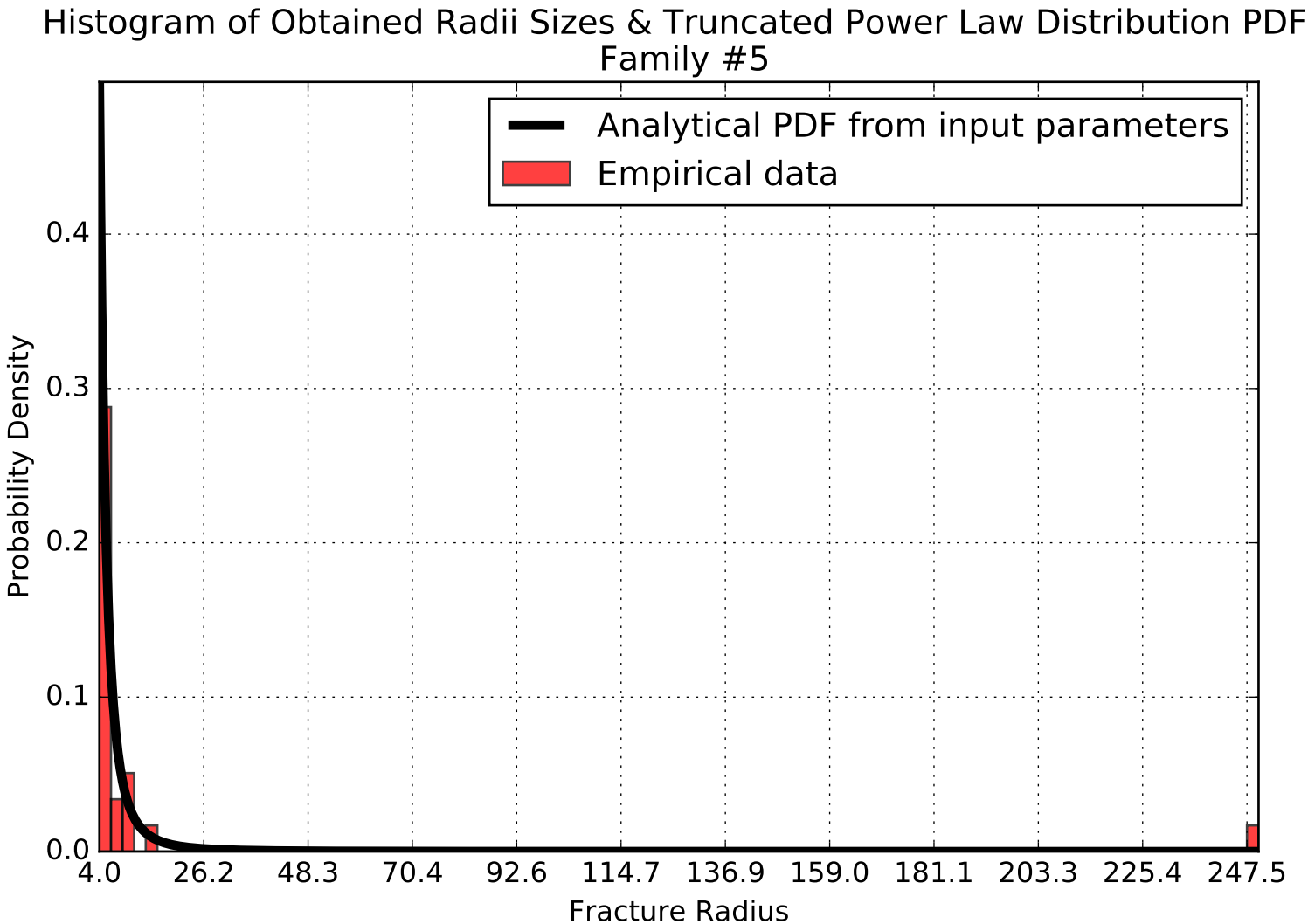
Rectanglular Family 4:
Global Family 4
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.2829
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 319.06 Degrees
Phi: 18.73 Degrees
Kappa: 35
Layer: 1 {40, 50}
Distribution: Truncated Power-Law
Alpha: 2.6
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 0.166667

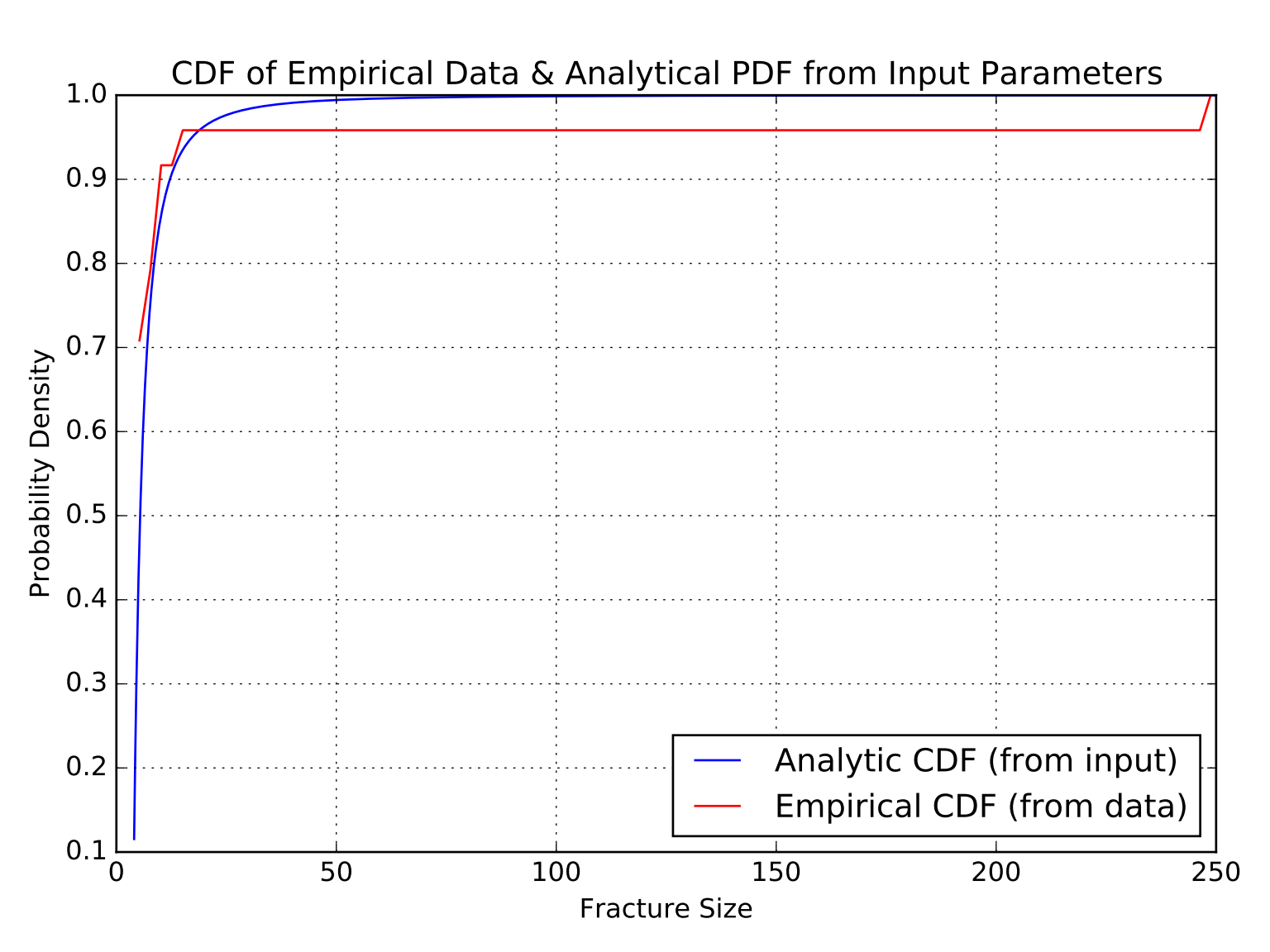

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #4
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
3.5
4.8
6.1
7.5
8.8
10.1
11.4
12.7
14.1
15.4
16.7
18.0
Fracture Radius

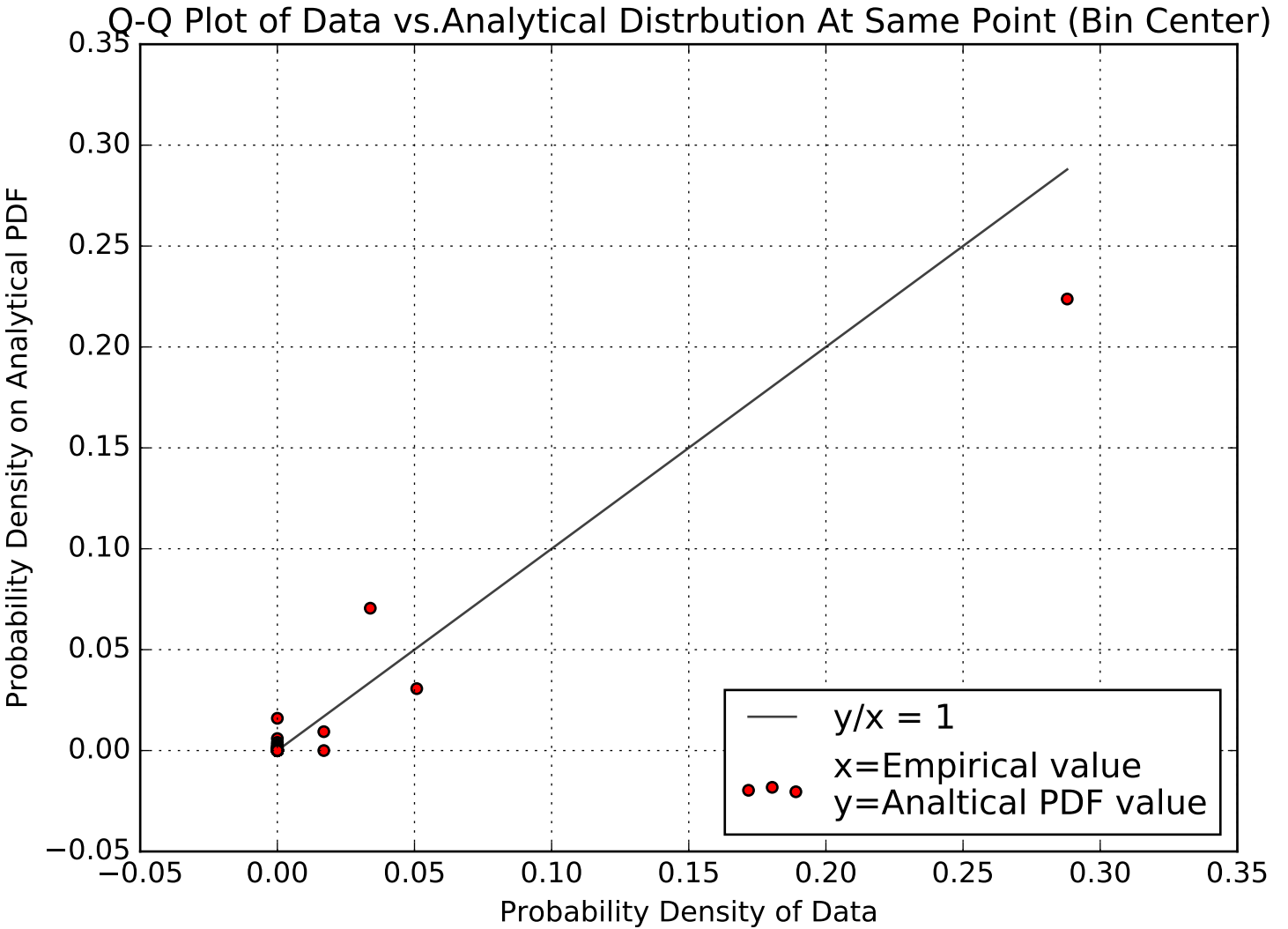

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
1.0
0.8
0.6
0.4
0.2
0.0
2
4
6
8
10
12
14
16
18
20
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8
1.0
y/x = 1
x=Empirical value
y=Analtical PDF value

Rectanglular Family 5:
Global Family 5
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.08841
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 48.39 Degrees
Phi: 7.85 Degrees
Kappa: 35
Layer: 1 {40, 50}
Distribution: Truncated Power-Law
Alpha: 2.01
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 0.166667


Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #5
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.1
0.2
0.3
0.4
4.0
26.2
48.3
70.4
92.6
114.7
136.9
159.0
181.1
203.3
225.4
247.5
Fracture Radius


CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
100
150
200
250
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
−0.05
−0.05
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
y/x = 1
x=Empirical value
y=Analtical PDF value

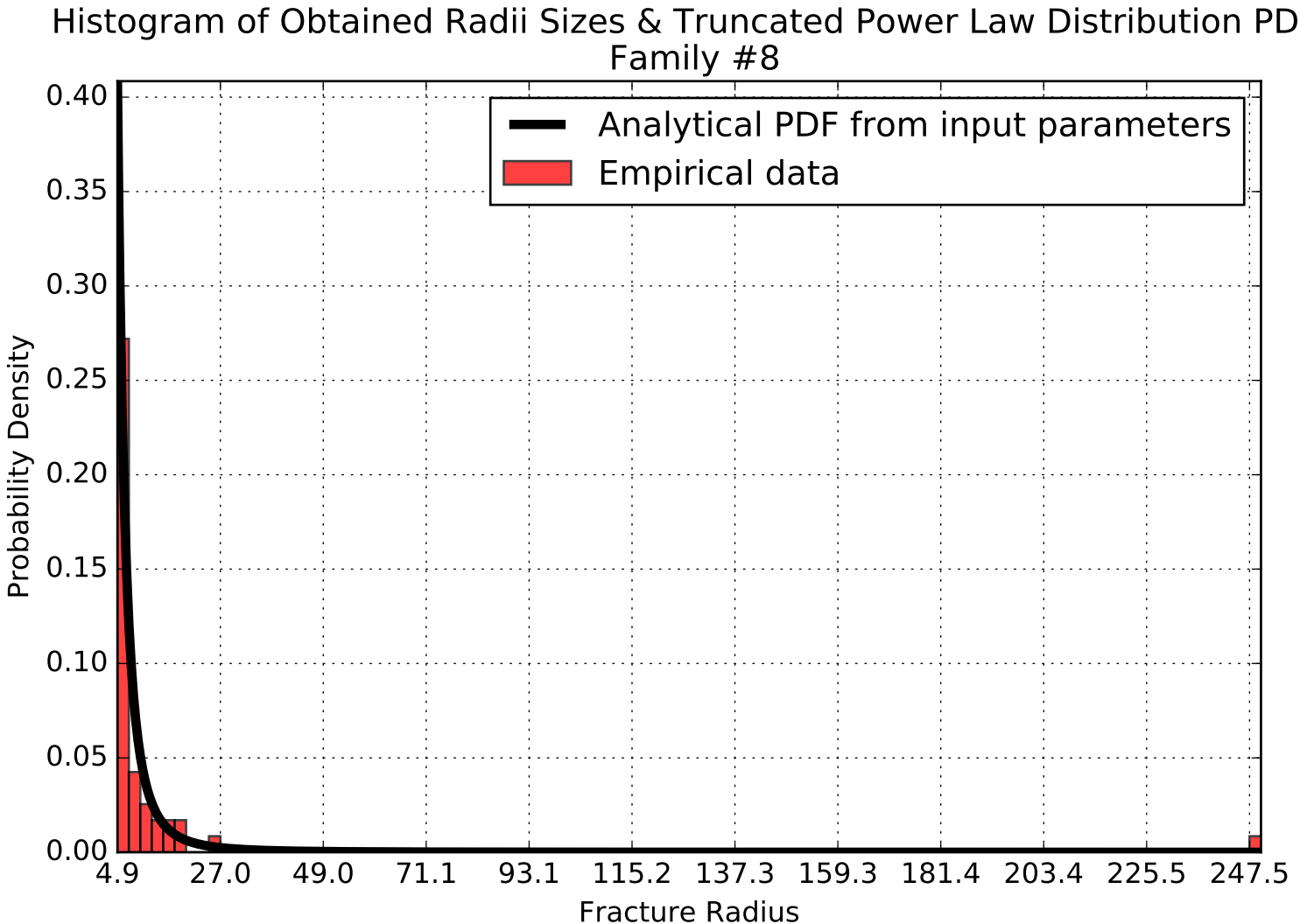
Rectanglular Family 6:
Global Family 6
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.2225
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 89.12 Degrees
Phi: 27.35 Degrees
Kappa: 18.34
Layer: 2 {-30, 37}
Distribution: Constant
Radius: 35m
Family Insertion Probability: 0.166667

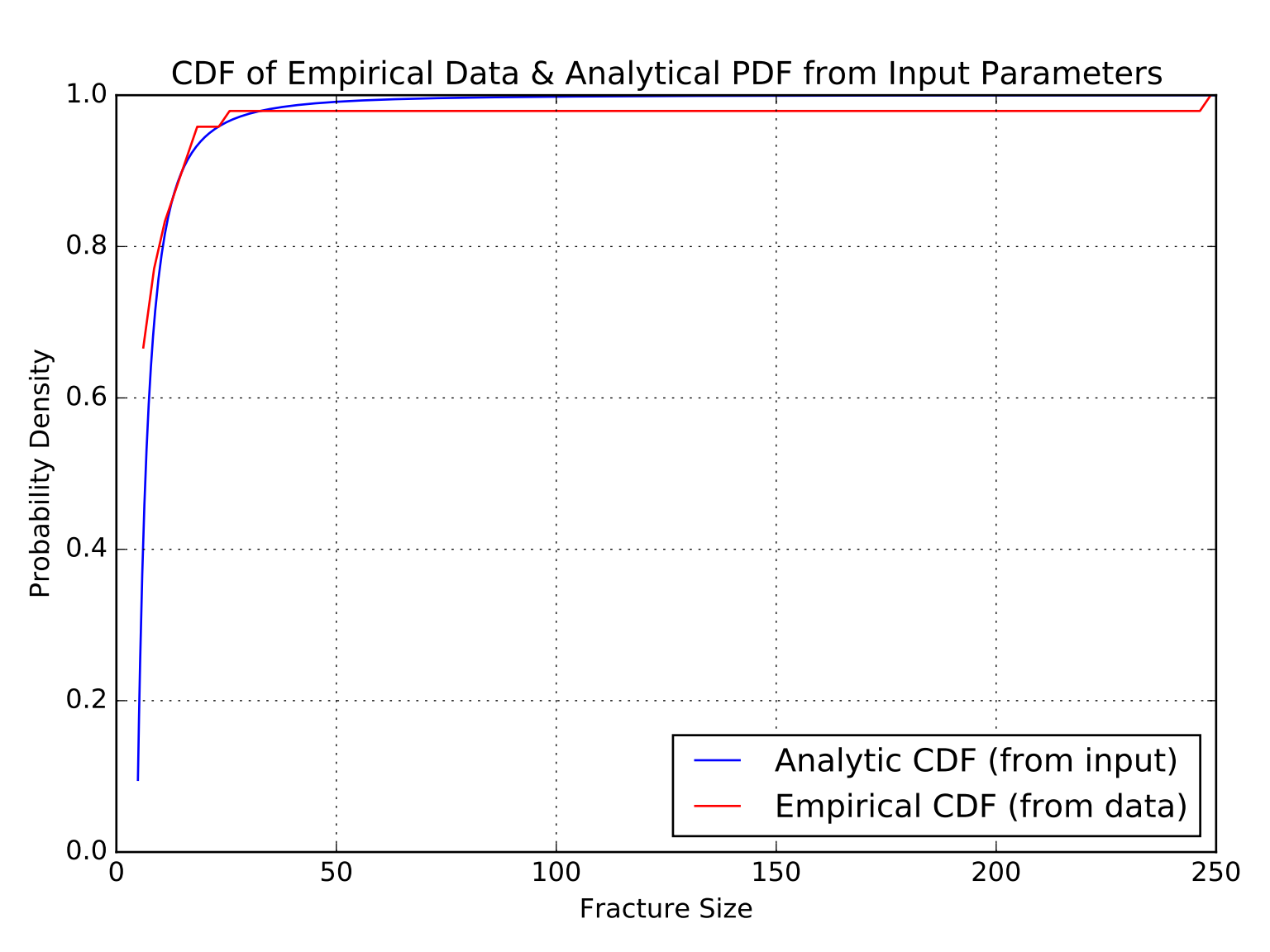
Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

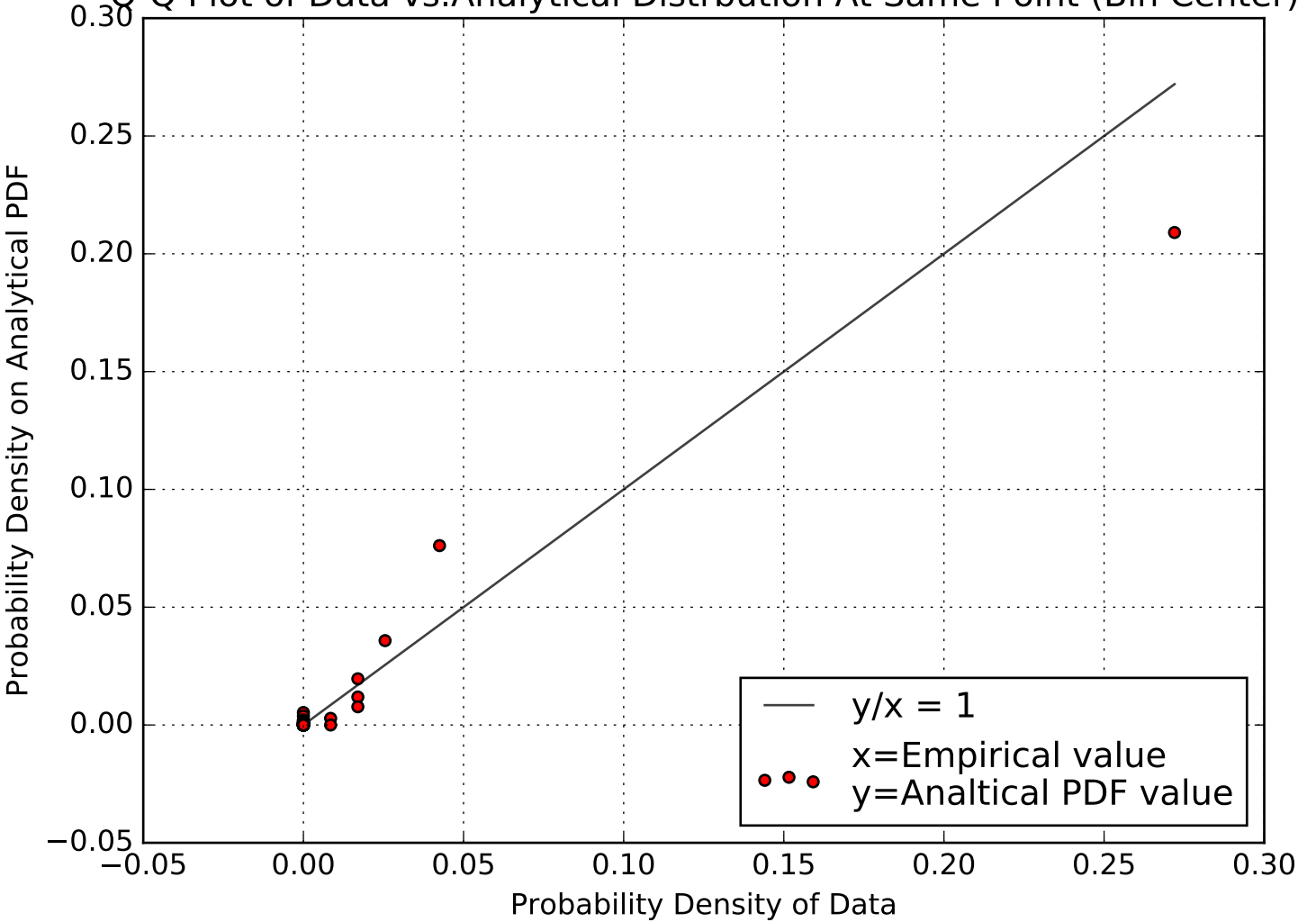
Rectanglular Family 7:
Global Family 7
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.05796
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 350.48 Degrees
Phi: 28.06 Degrees
Kappa: 26.24
Layer: 2 {-30, 37}
Distribution: Constant
Radius: 35m
Family Insertion Probability: 4.62428e-44

Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

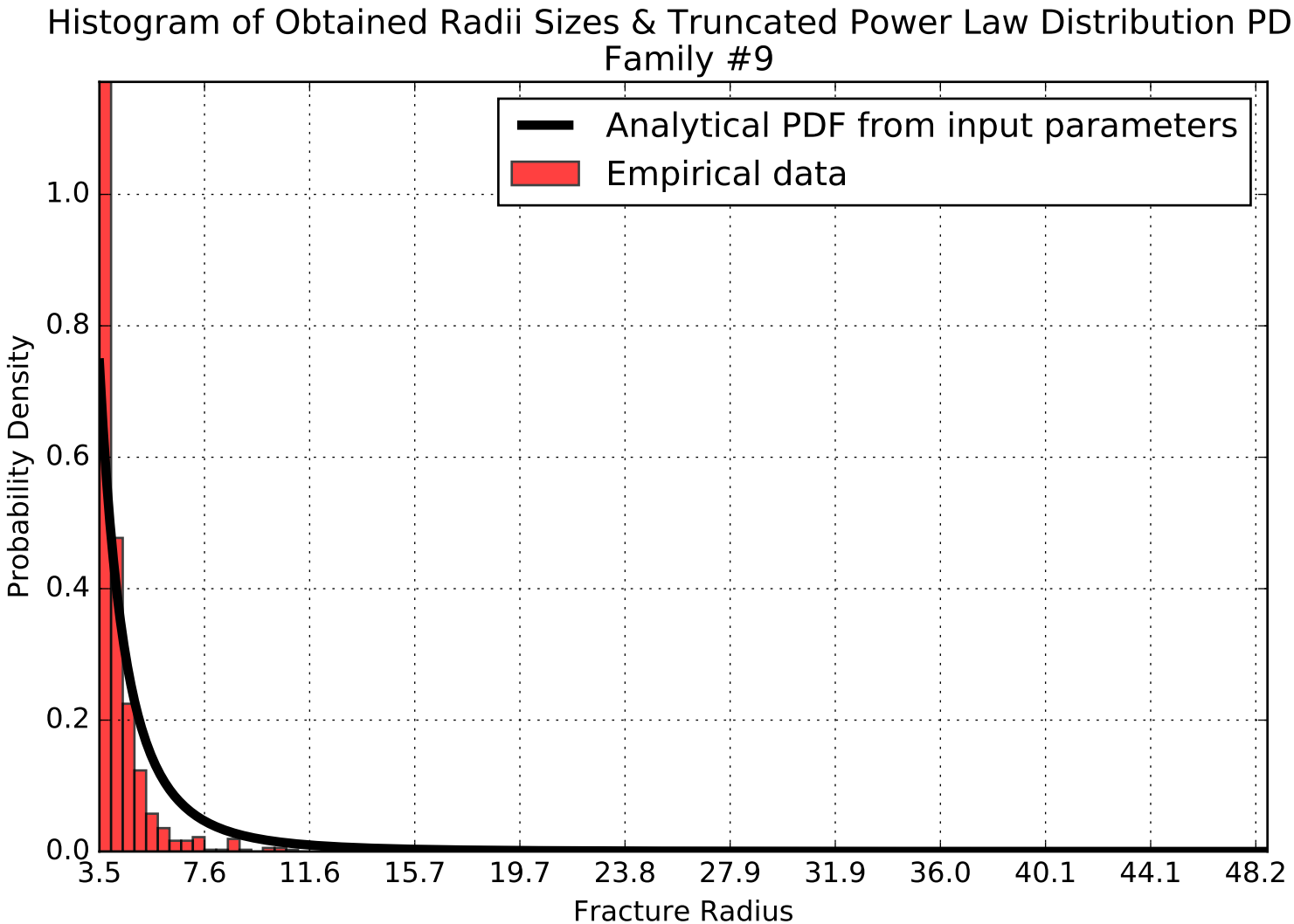
Rectanglular Family 8:
Global Family 8
Number of Vertices: 4
Aspect Ratio: 1
P32 (Fracture Intensity) Target: 0.01783
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 19.39 Degrees
Phi: 53.21 Degrees
Kappa: 35
Layer: 2 {-30, 37}
Distribution: Truncated Power-Law
Alpha: 2
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 0

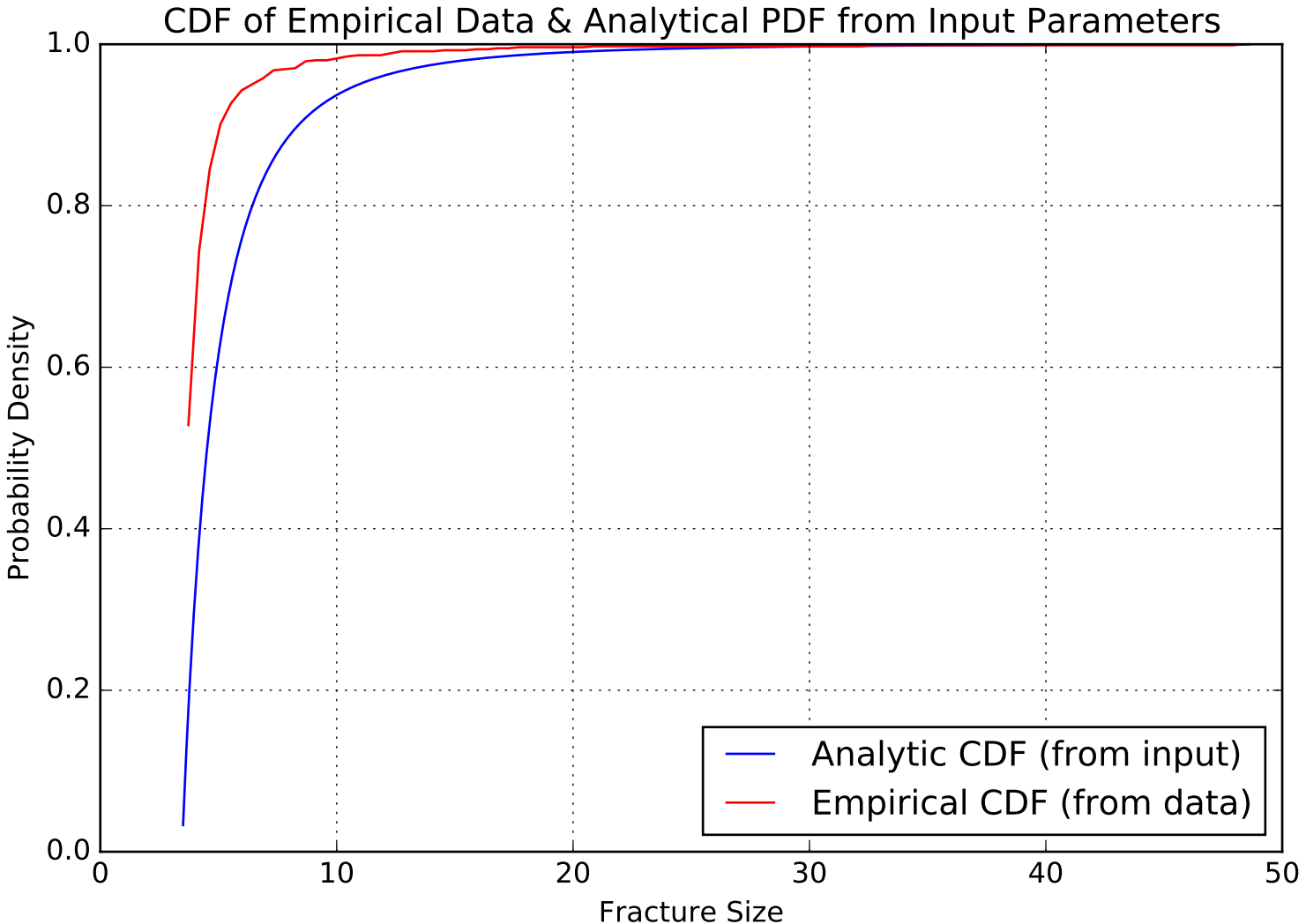

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF
Family #8
Analytical PDF from input parameters
Empirical data
Probability Density
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
4.9
27.0
49.0
71.1
93.1
115.2
137.3
159.3
181.4
203.4
225.5
247.5
Fracture Radius

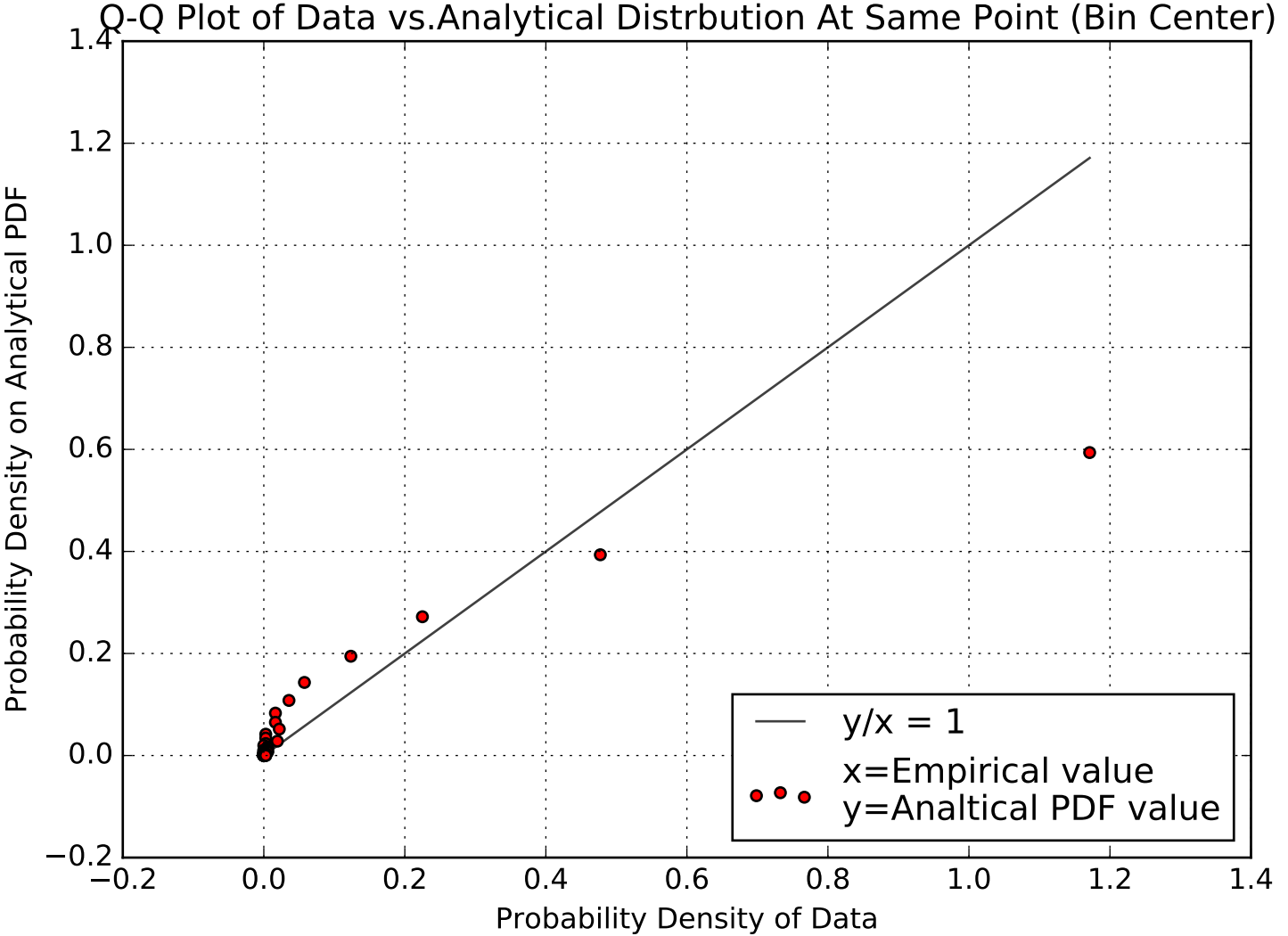

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
250
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
0.30
0.25
0.20
0.15
0.10
0.05
0.00
−0.05
−0.05
0.00
0.05
0.10
0.15
0.20
0.25
0.30
y/x = 1
x=Empirical value
y=Analtical PDF value

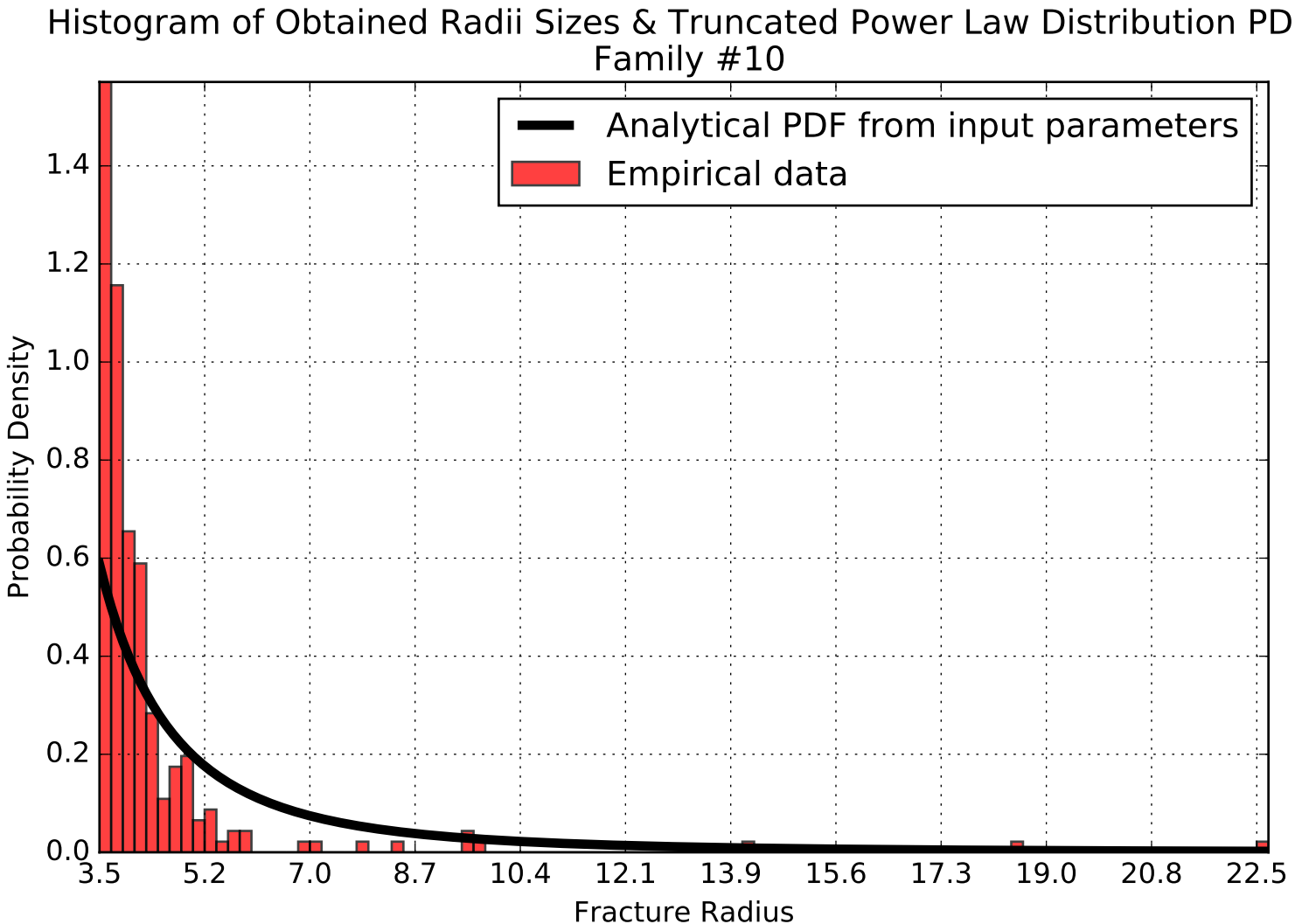
Rectanglular Family 9:
Global Family 9
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.14268
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 319.06 Degrees
Phi: 18.73 Degrees
Kappa: 35
Layer: 2 {-30, 37}
Distribution: Truncated Power-Law
Alpha: 2.6
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 1.75162e-42

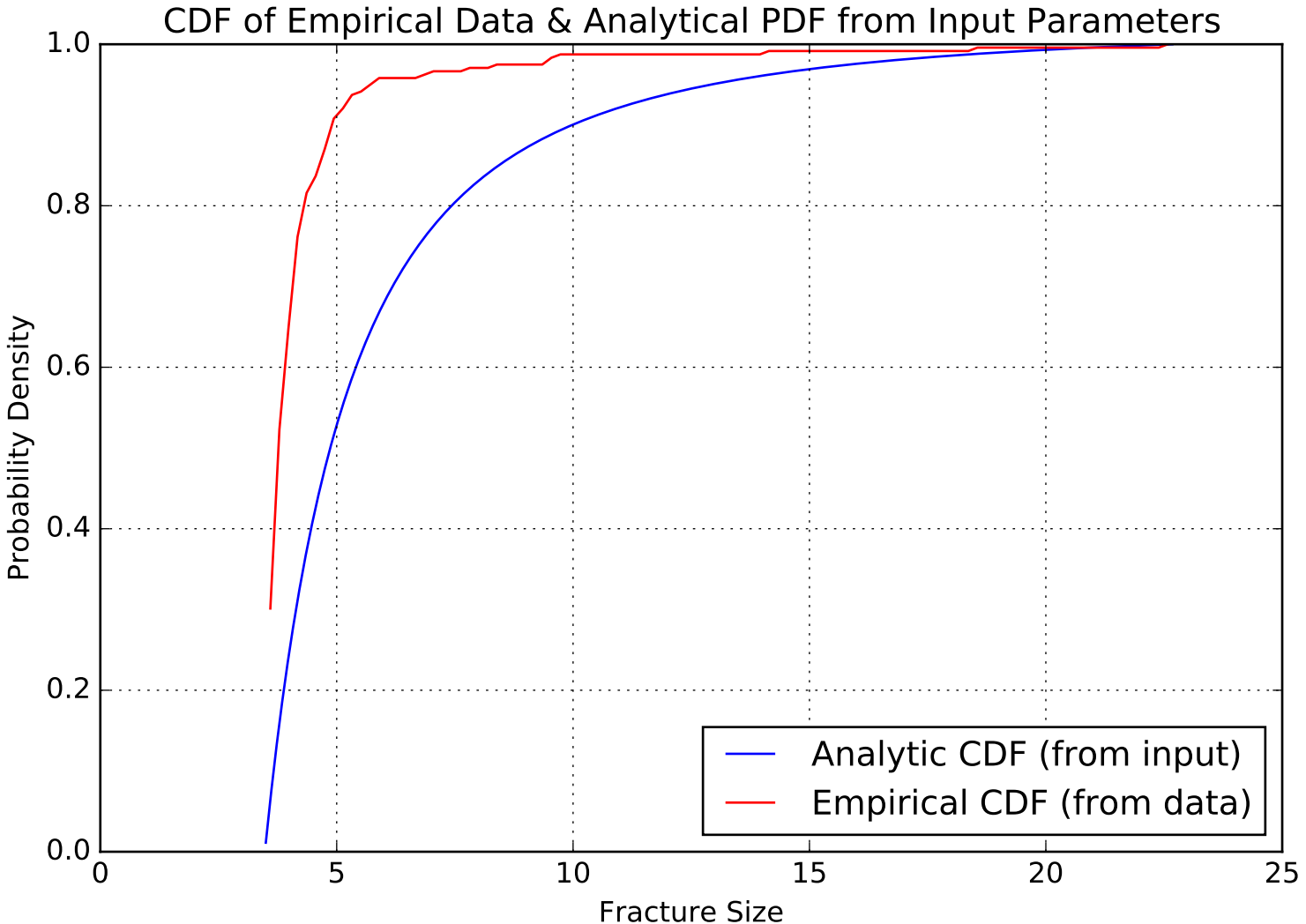

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #9
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.2
0.4
0.6
0.8
1.0
3.5
7.6
11.6
15.7
19.7
23.8
27.9
31.9
36.0
40.1
44.1
48.2
Fracture Radius

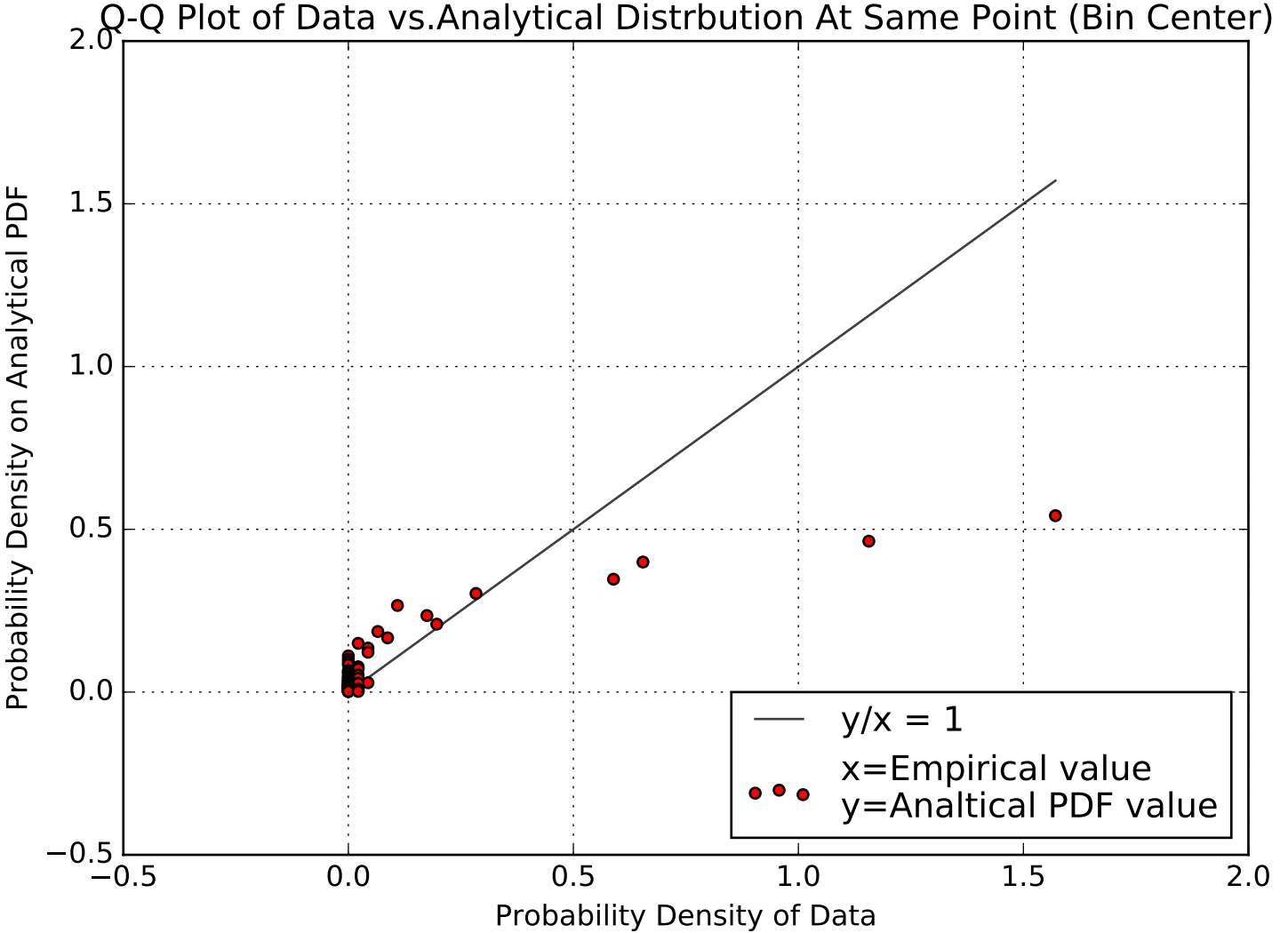

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
y/x = 1
x=Empirical value
y=Analtical PDF value

Rectanglular Family 10:
Global Family 10
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.04459
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 48.39 Degrees
Phi: 7.85 Degrees
Kappa: 35
Layer: 2 {-30, 37}
Distribution: Truncated Power-Law
Alpha: 2.01
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 3.4528e-42


Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #10
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
3.5
5.2
7.0
8.7
10.4
12.1
13.9
15.6
17.3
19.0
20.8
22.5
Fracture Radius


CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
2.0
1.5
1.0
0.5
0.0
−0.5
−0.5
0.0
0.5
1.0
1.5
2.0
y/x = 1
x=Empirical value
y=Analtical PDF value

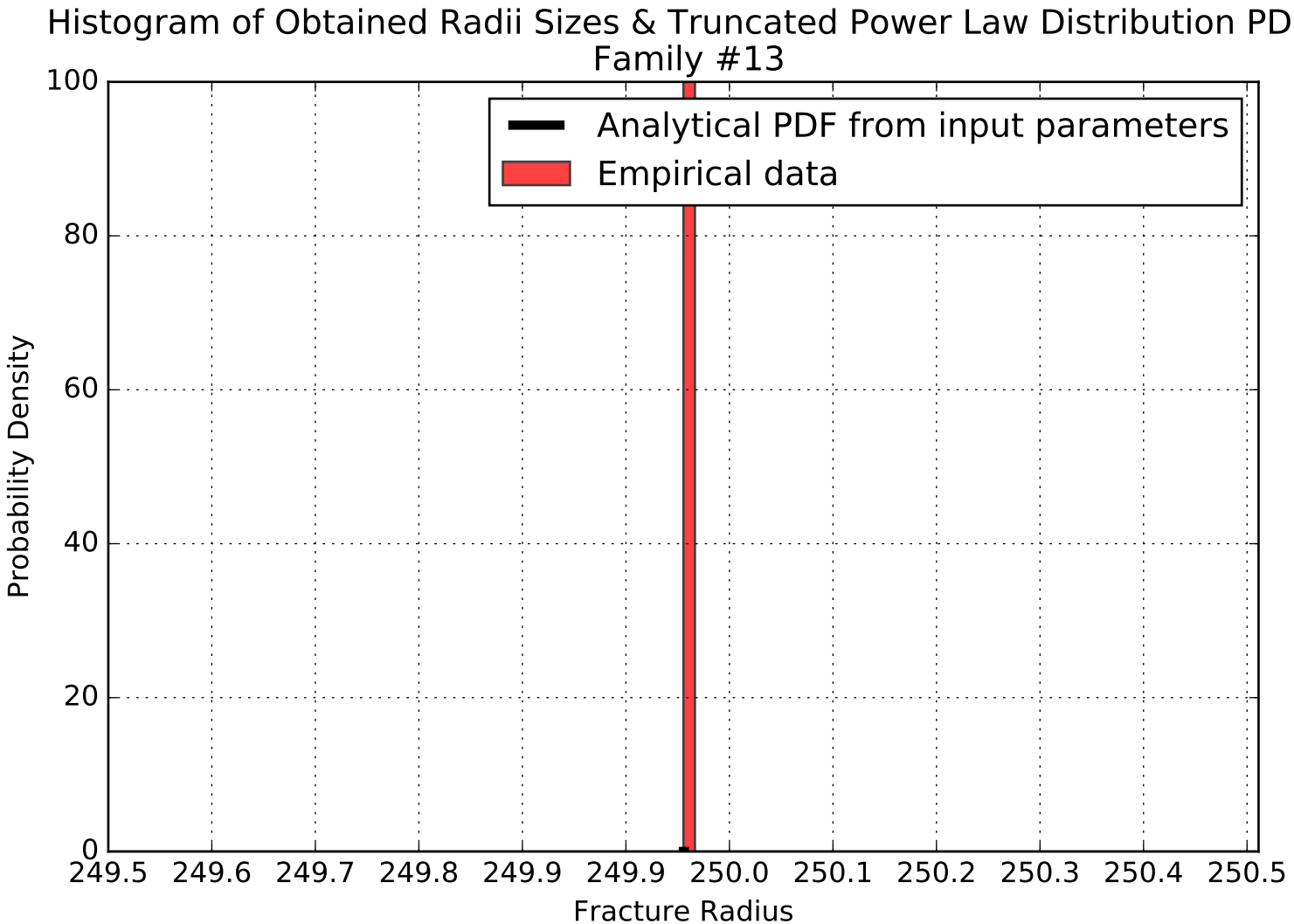
Rectanglular Family 11:
Global Family 11
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.1754
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 89.12 Degrees
Phi: 27.35 Degrees
Kappa: 18.34
Layer: 3 {-48, -28}
Distribution: Constant
Radius: 10m
Family Insertion Probability: 1.01888e-41

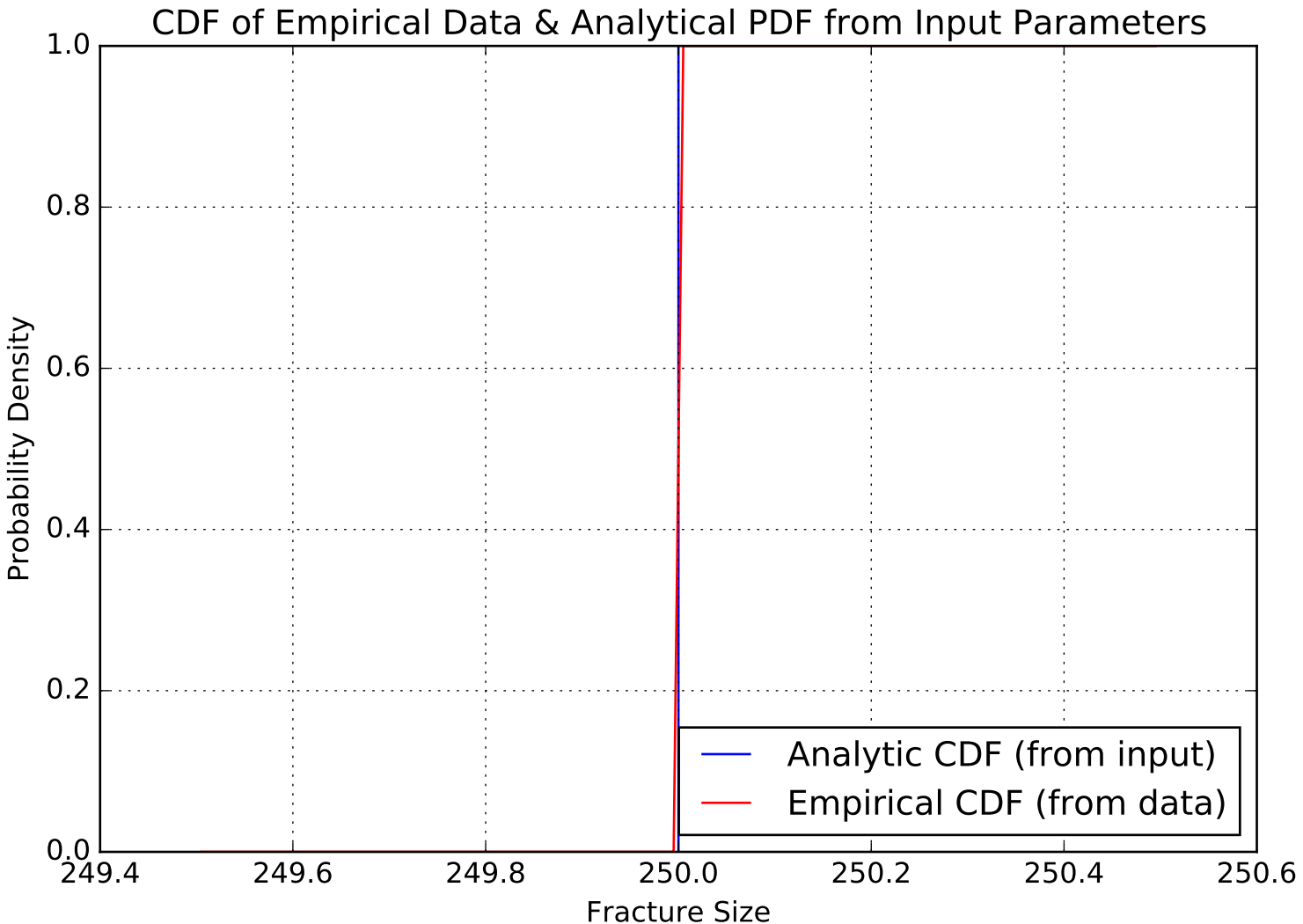
Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

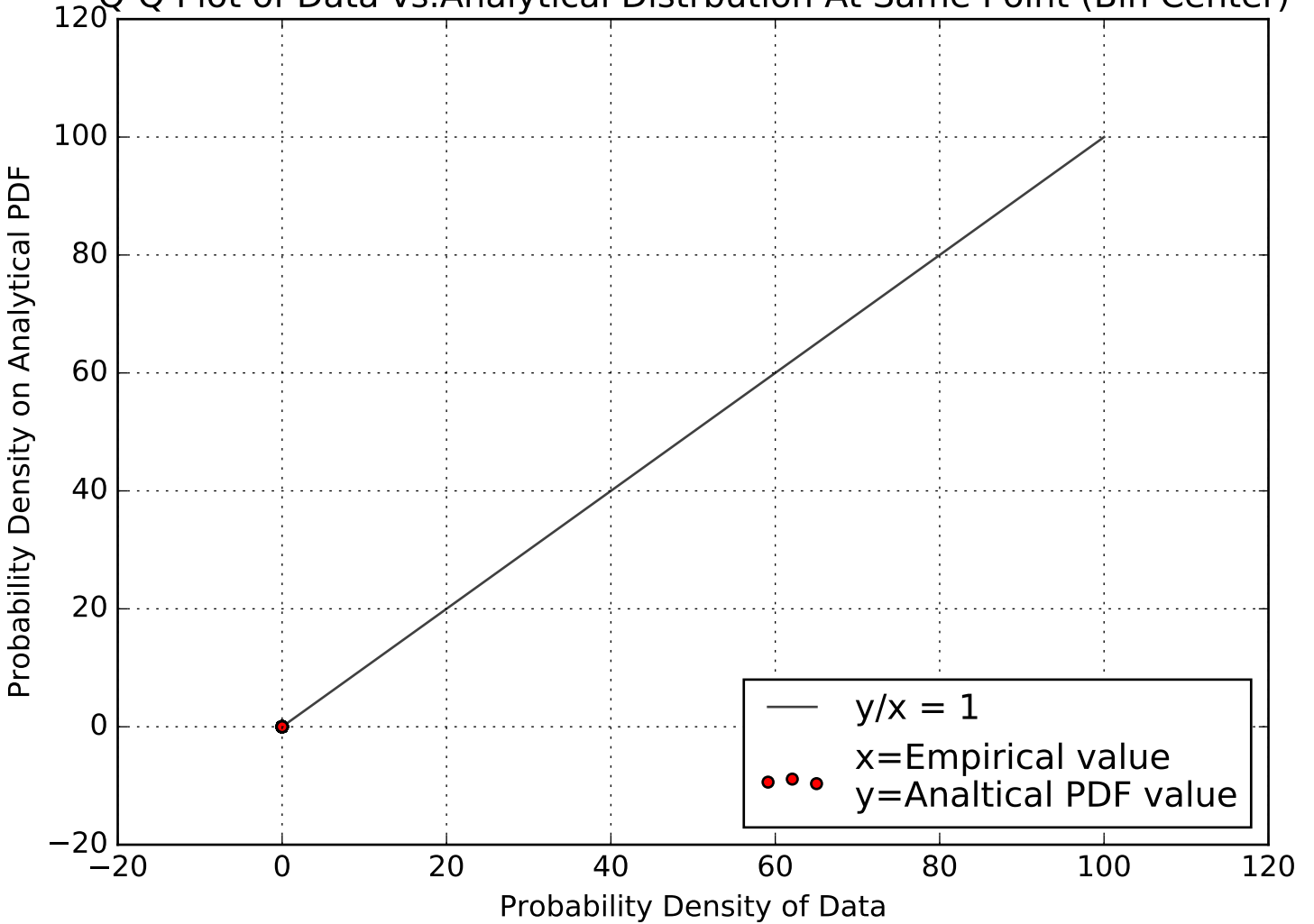
Rectanglular Family 12:
Global Family 12
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.0456
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 350.48 Degrees
Phi: 28.06 Degrees
Kappa: 26.24
Layer: 3 {-48, -28}
Distribution: Constant
Radius: 10m
Family Insertion Probability: 1.79242

Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

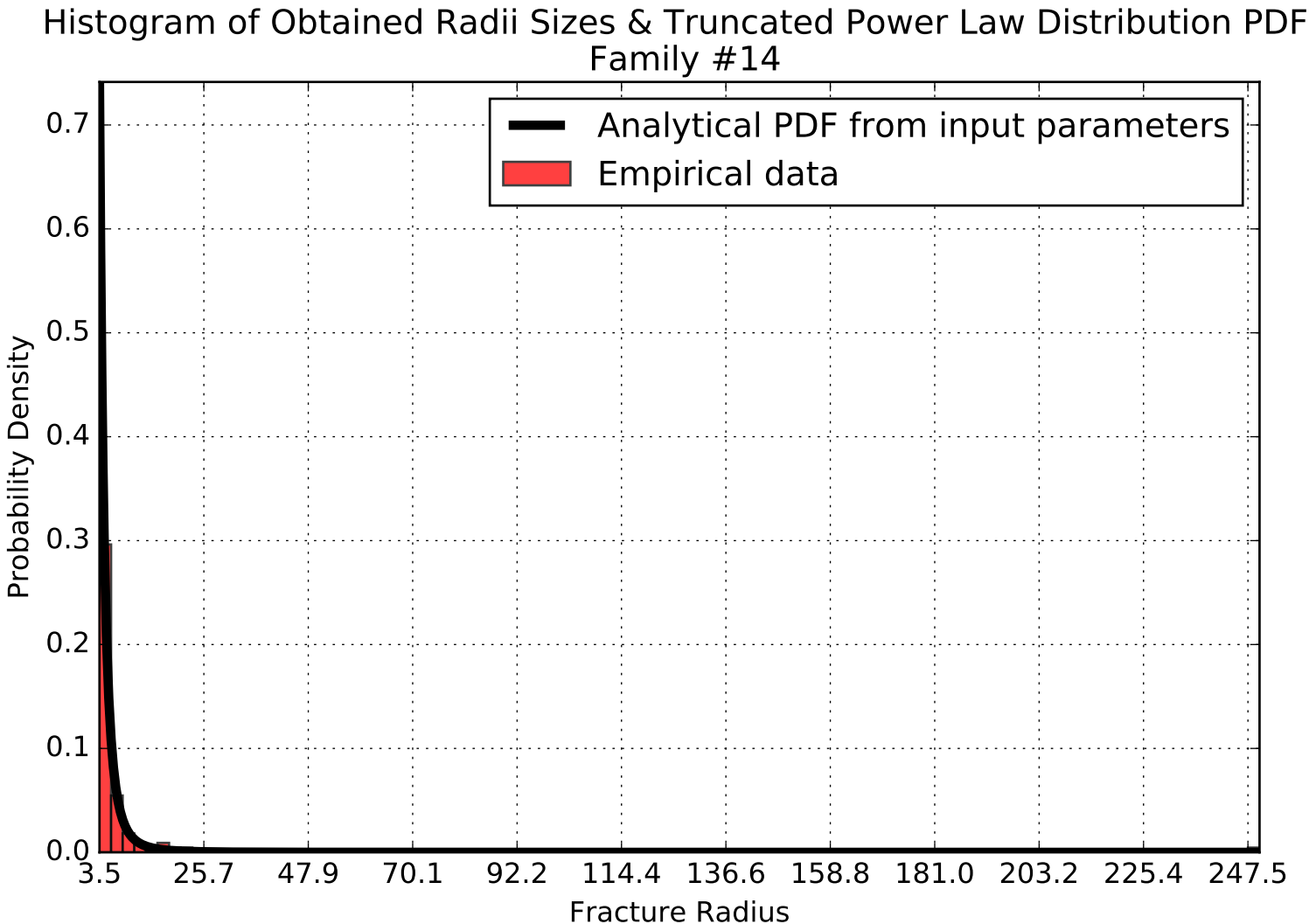
Rectanglular Family 13:
Global Family 13
Number of Vertices: 4
Aspect Ratio: 1
P32 (Fracture Intensity) Target: 0.01403
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 19.39 Degrees
Phi: 53.21 Degrees
Kappa: 35
Layer: 3 {-48, -28}
Distribution: Truncated Power-Law
Alpha: 2
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: -1.03322e-27

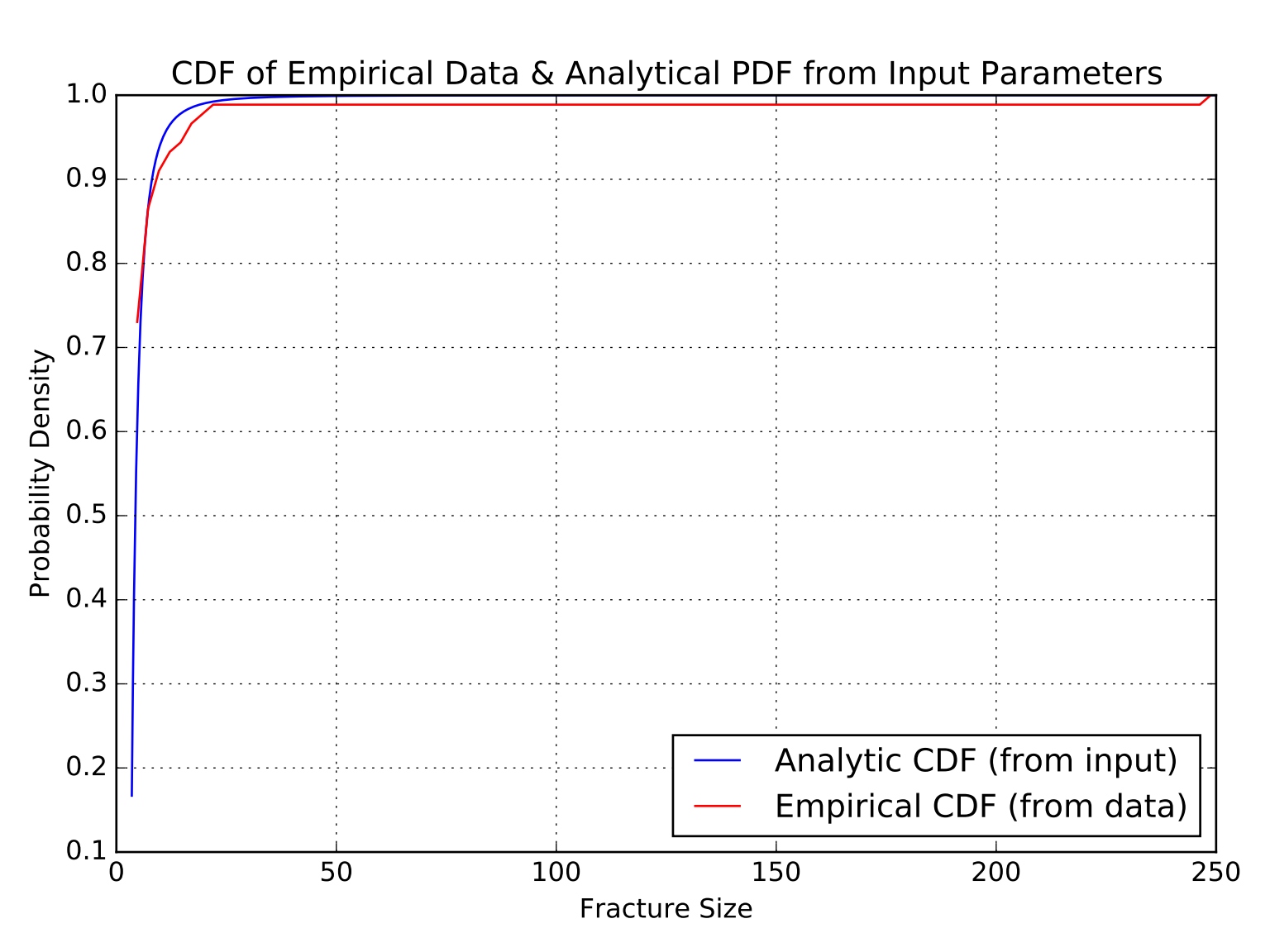

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #13
Analytical PDF from input parameters
Empirical data
Probability Density
Fracture Radius
0
20
40
60
80
100
249.5
249.6
249.7
249.8
249.9
249.9
250.0
250.1
250.2
250.3
250.4
250.5

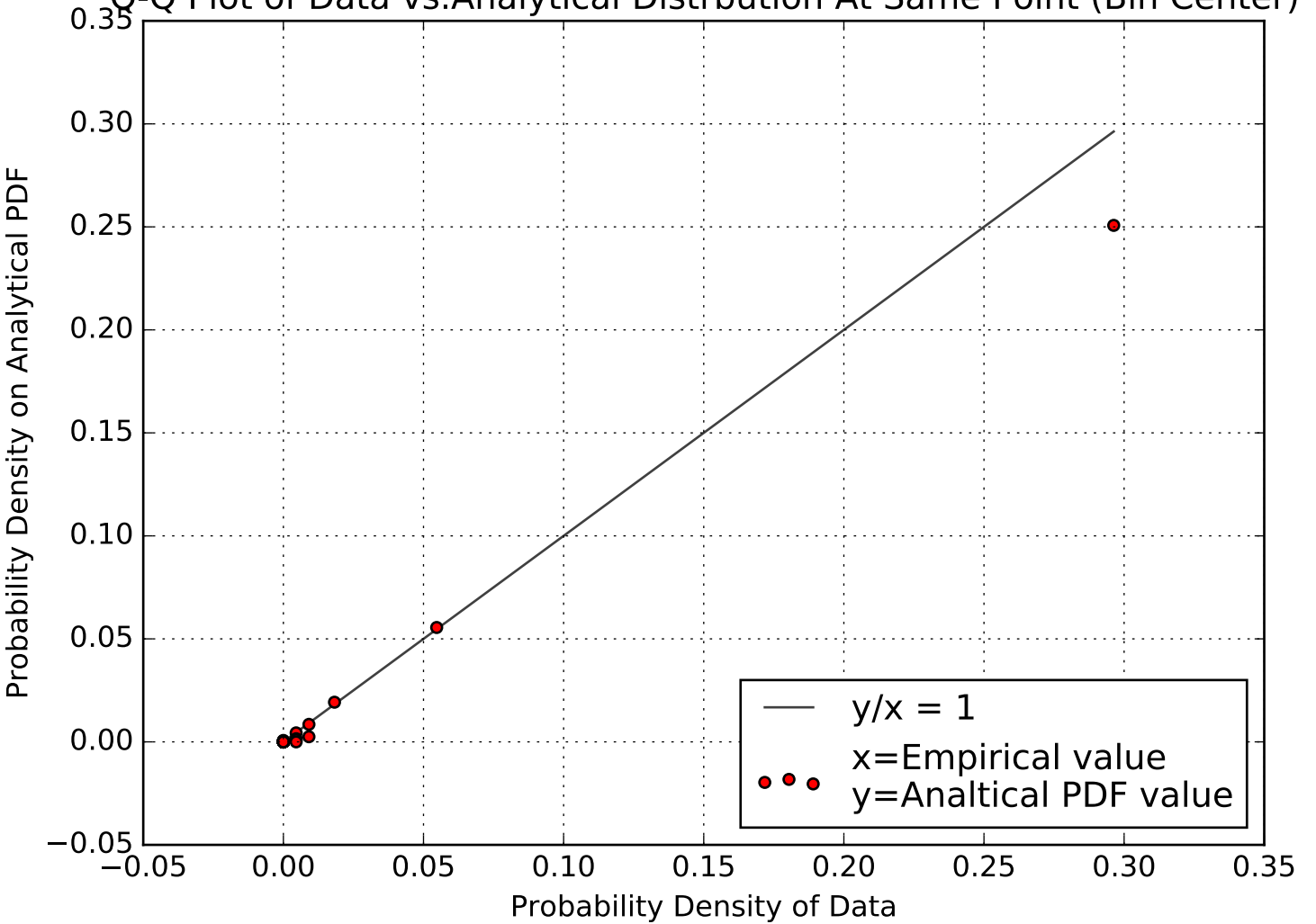

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
1.0
0.8
0.6
0.4
0.2
0.0
249.4
249.6
249.8
250.0
250.2
250.4
250.6
Fracture Size
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
120
100
80
60
40
20
0
−20
−20
0
20
40
60
80
100
120
y/x = 1
x=Empirical value
y=Analtical PDF value

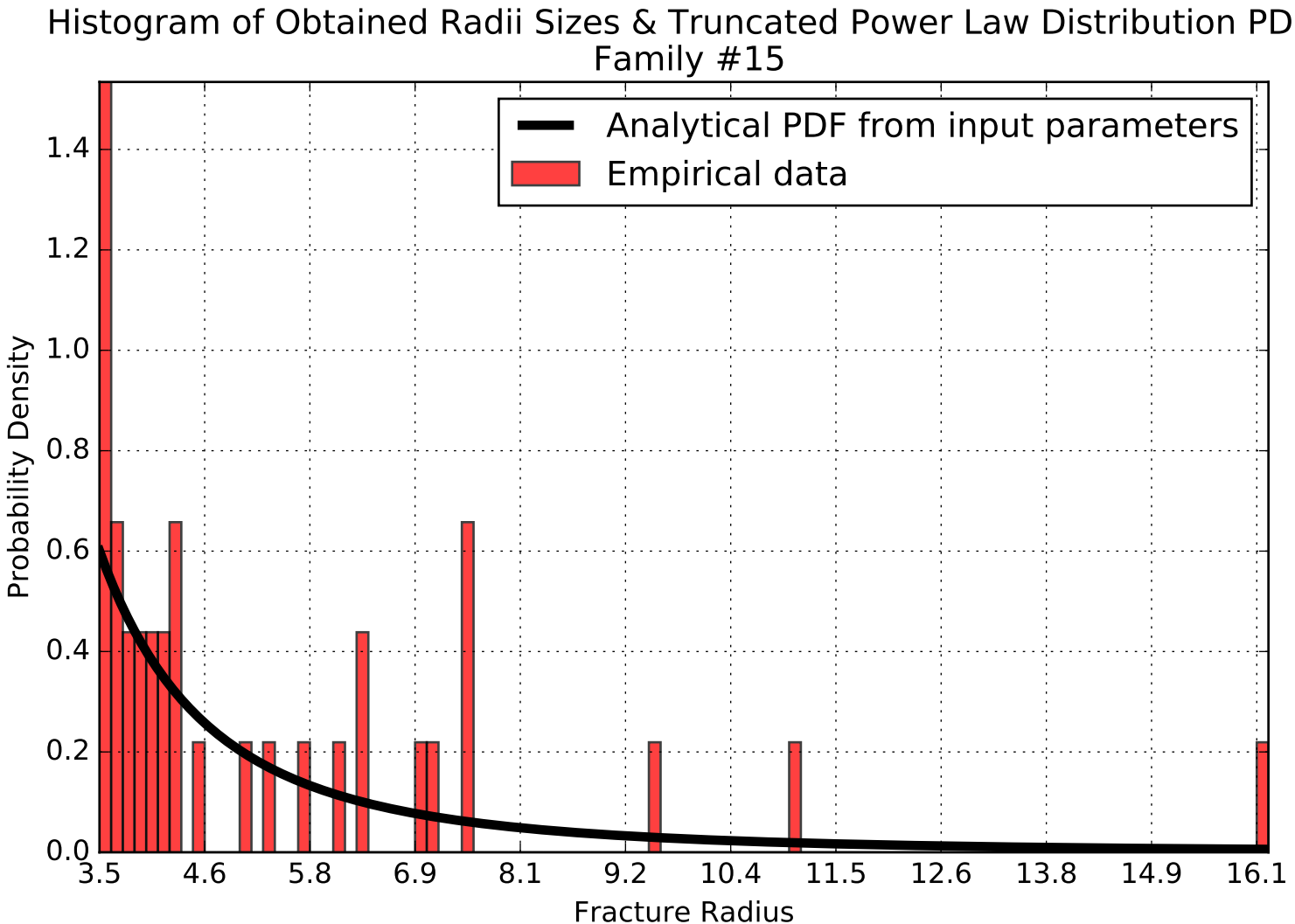
Rectanglular Family 14:
Global Family 14
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.1122
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 319.06 Degrees
Phi: 18.73 Degrees
Kappa: 35
Layer: 3 {-48, -28}
Distribution: Truncated Power-Law
Alpha: 2.6
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: -1.4761

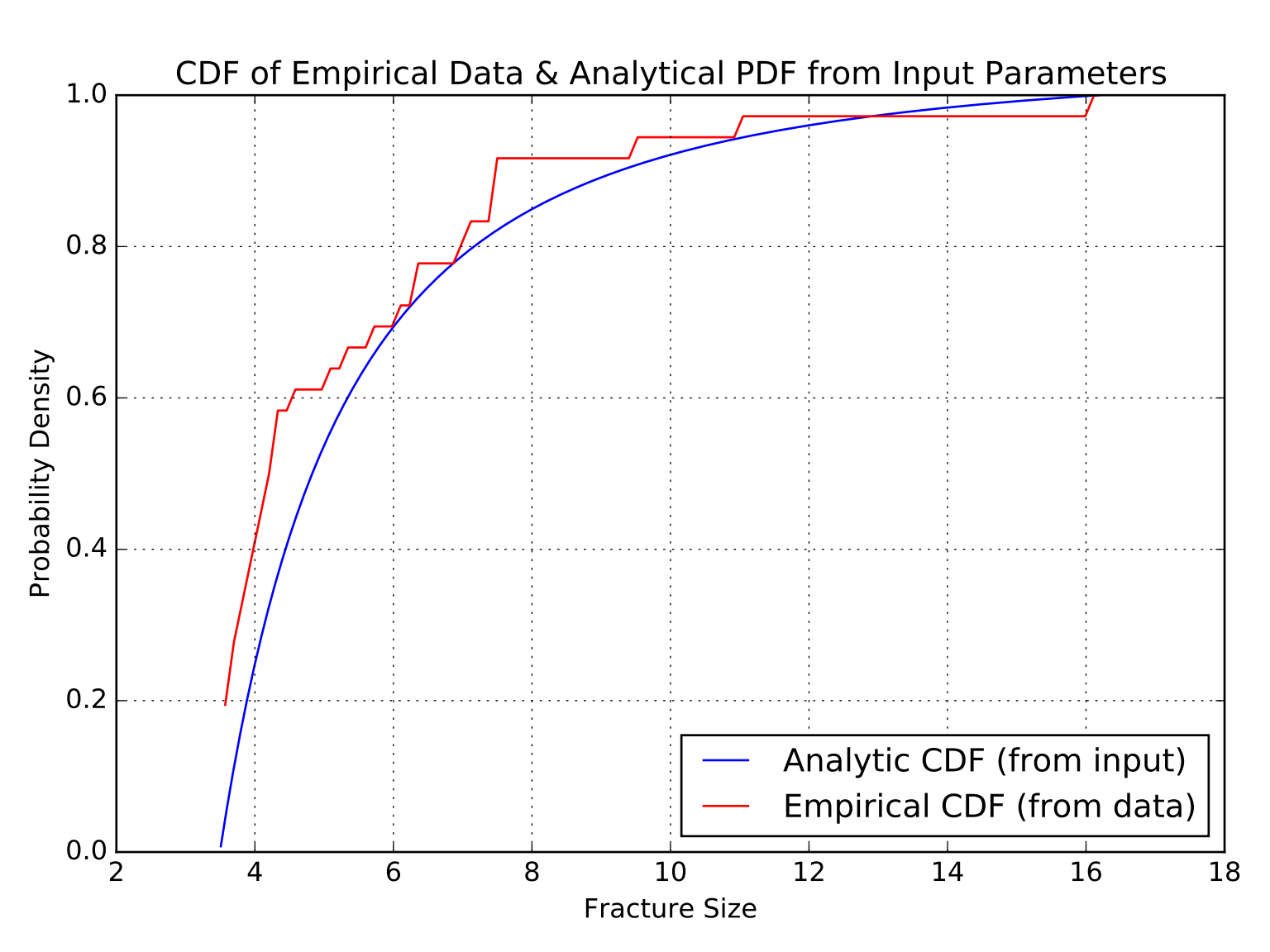

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #14
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
3.5
25.7
47.9
70.1
92.2
114.4
136.6
158.8
181.0
203.2
225.4
247.5
Fracture Radius

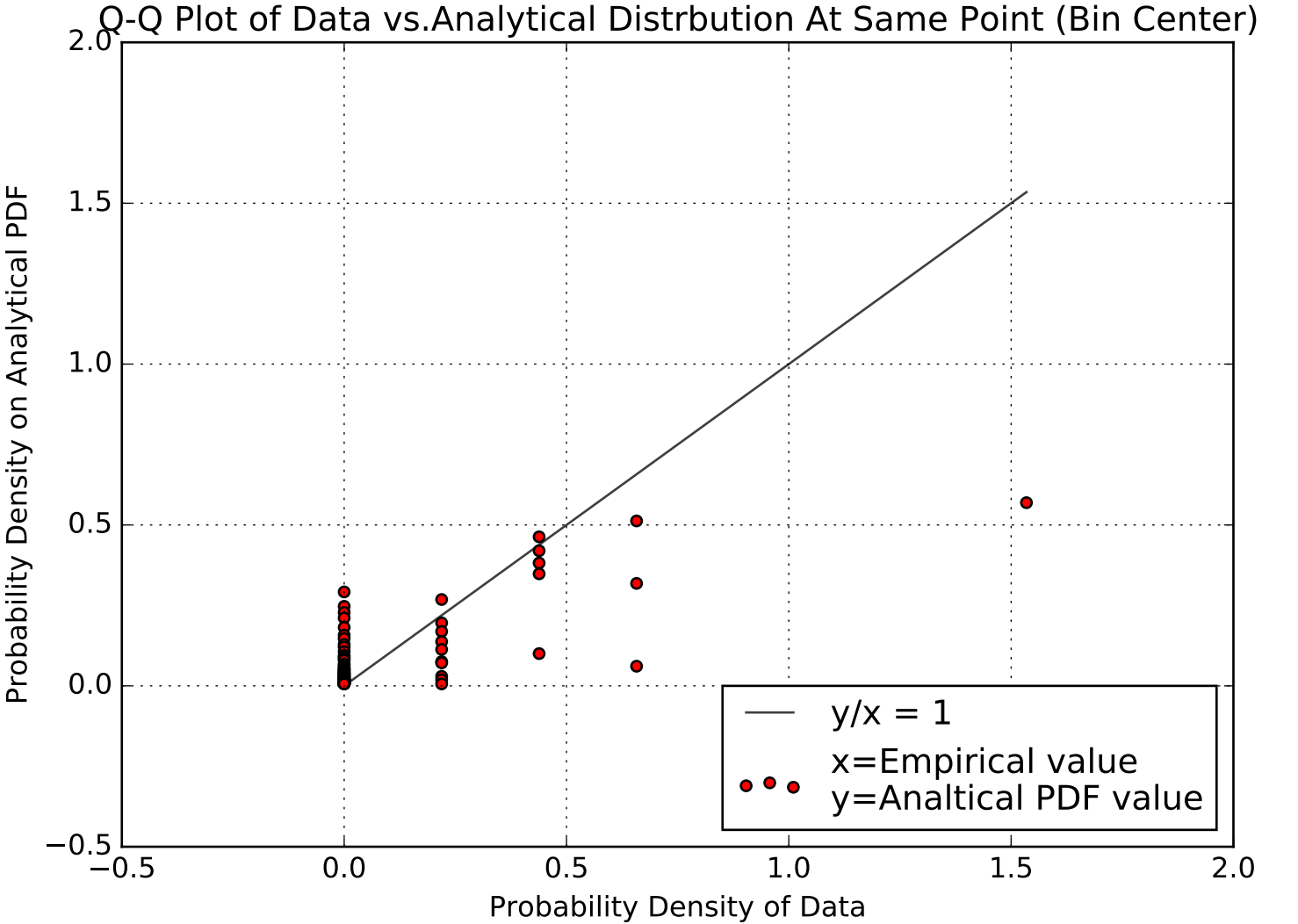

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
100
150
200
250
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
−0.05
−0.05
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
y/x = 1
x=Empirical value
y=Analtical PDF value

Rectanglular Family 15:
Global Family 15
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.03508
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 48.39 Degrees
Phi: 7.85 Degrees
Kappa: 35
Layer: 3 {-48, -28}
Distribution: Truncated Power-Law
Alpha: 2.01
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 4.62428e-44


Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #15
Analytical PDF from input parameters
Empirical data
Probability Density
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
3.5
4.6
5.8
6.9
8.1
9.2
10.4
11.5
12.6
13.8
14.9
16.1
Fracture Radius


CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
1.0
0.8
0.6
0.4
0.2
0.0
2
4
6
8
10
12
14
16
18
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
2.0
1.5
1.0
0.5
0.0
−0.5
−0.5
0.0
0.5
1.0
1.5
2.0
y/x = 1
x=Empirical value
y=Analtical PDF value

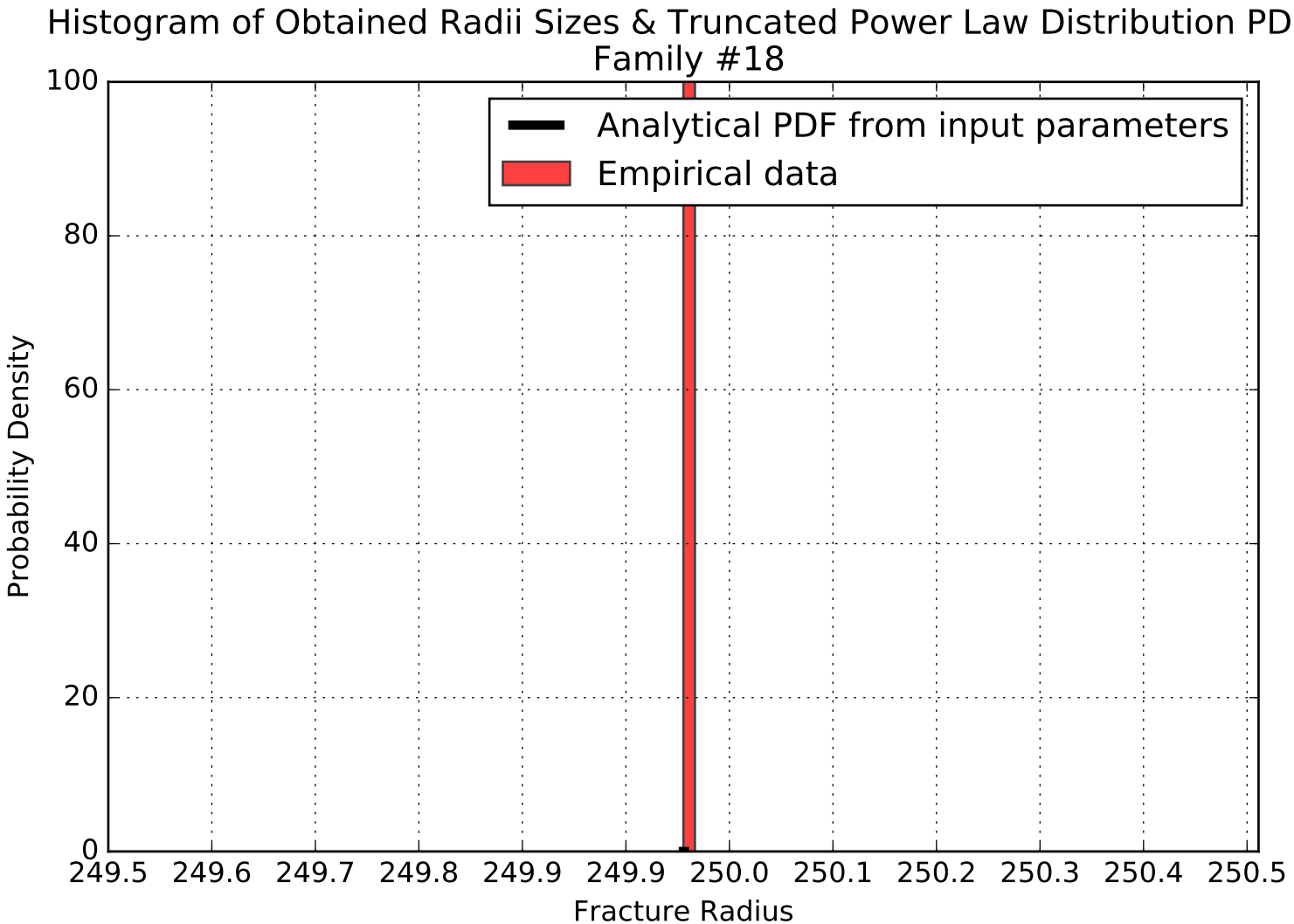
Rectanglular Family 16:
Global Family 16
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.0005
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 89.12 Degrees
Phi: 27.35 Degrees
Kappa: 18.34
Layer: 4 {-50, -45}
Distribution: Constant
Radius: 5m
Family Insertion Probability: 0

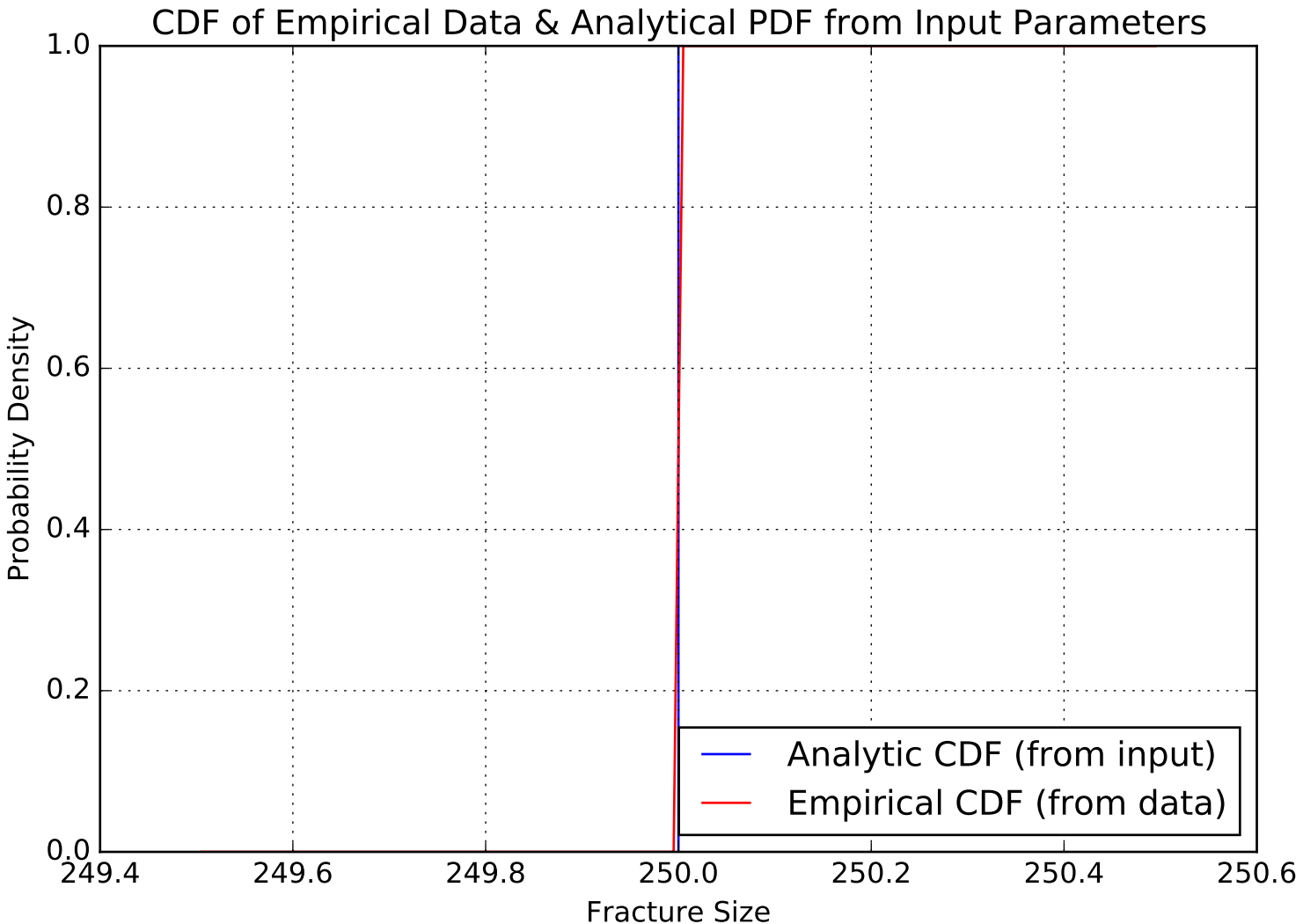
Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

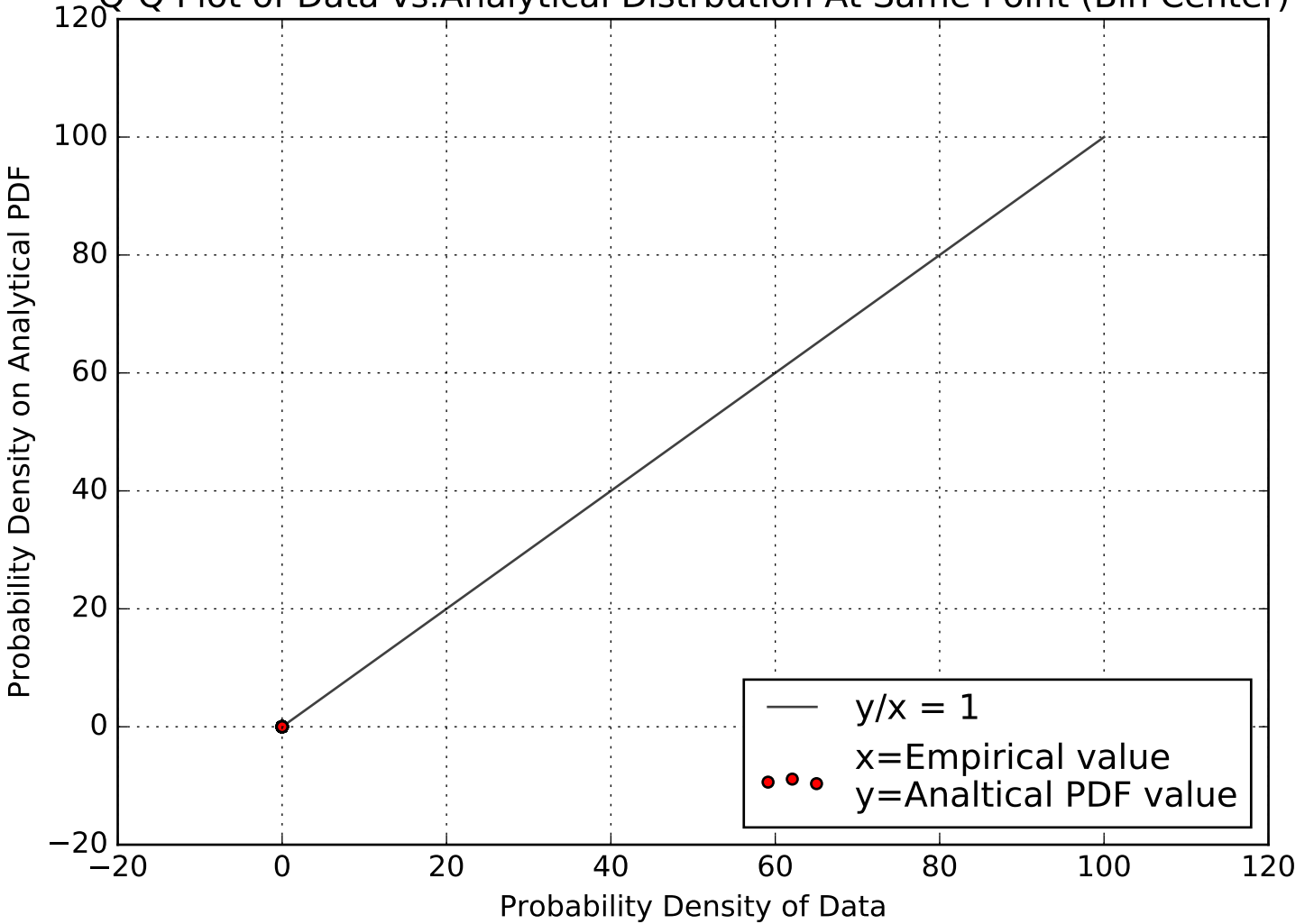
Rectanglular Family 17:
Global Family 17
Number of Vertices: 4
Aspect Ratio: 0.2
P32 (Fracture Intensity) Target: 0.0005
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 350.48 Degrees
Phi: 28.06 Degrees
Kappa: 26.24
Layer: 4 {-50, -45}
Distribution: Constant
Radius: 5m
Family Insertion Probability: 9.68157e-42

Constant distribution, only contains one radius size.
No distribution graphs will be made for this family.

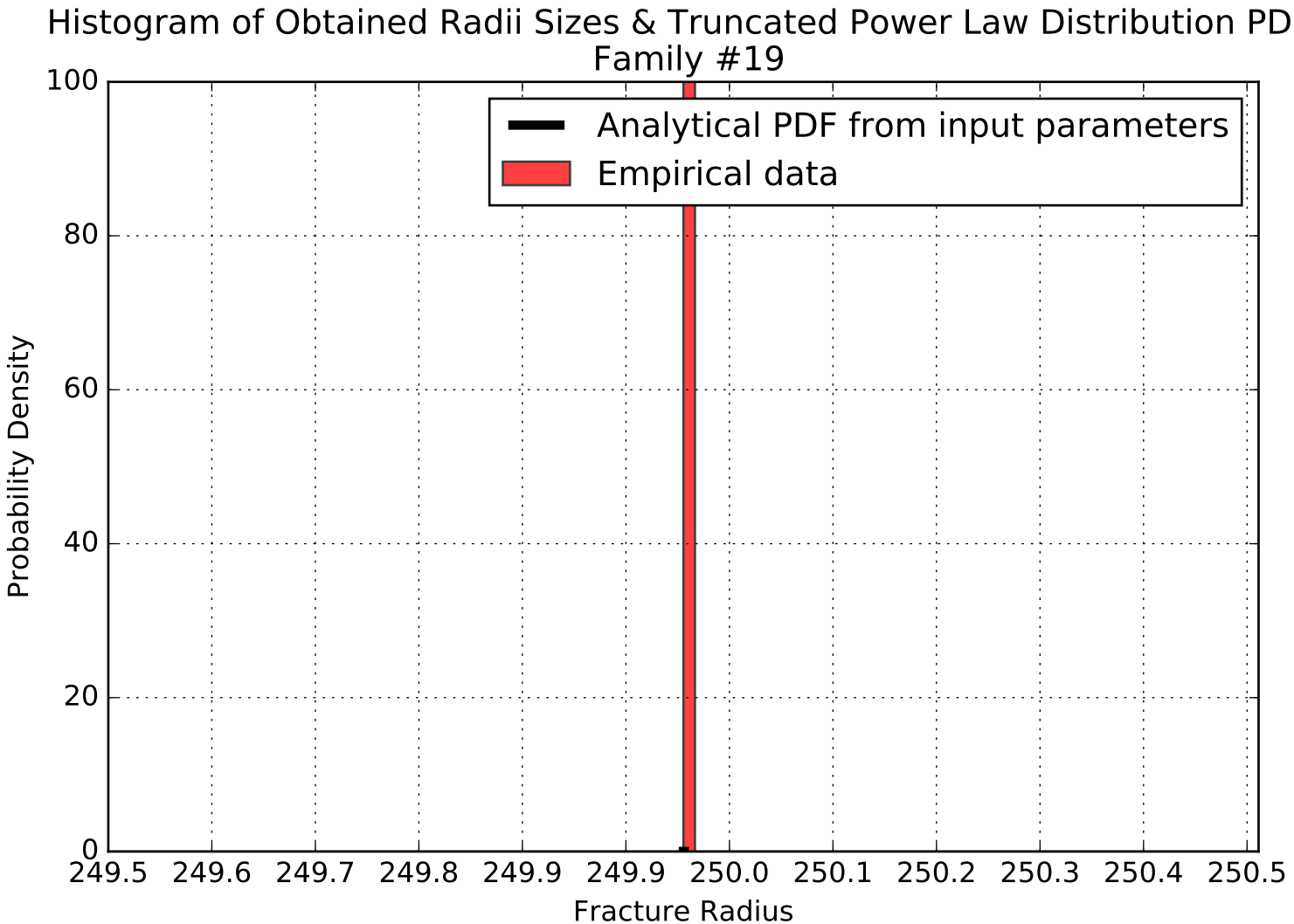
Rectanglular Family 18:
Global Family 18
Number of Vertices: 4
Aspect Ratio: 1
P32 (Fracture Intensity) Target: 0.0005
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 19.39 Degrees
Phi: 53.21 Degrees
Kappa: 35
Layer: 4 {-50, -45}
Distribution: Truncated Power-Law
Alpha: 2
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 0

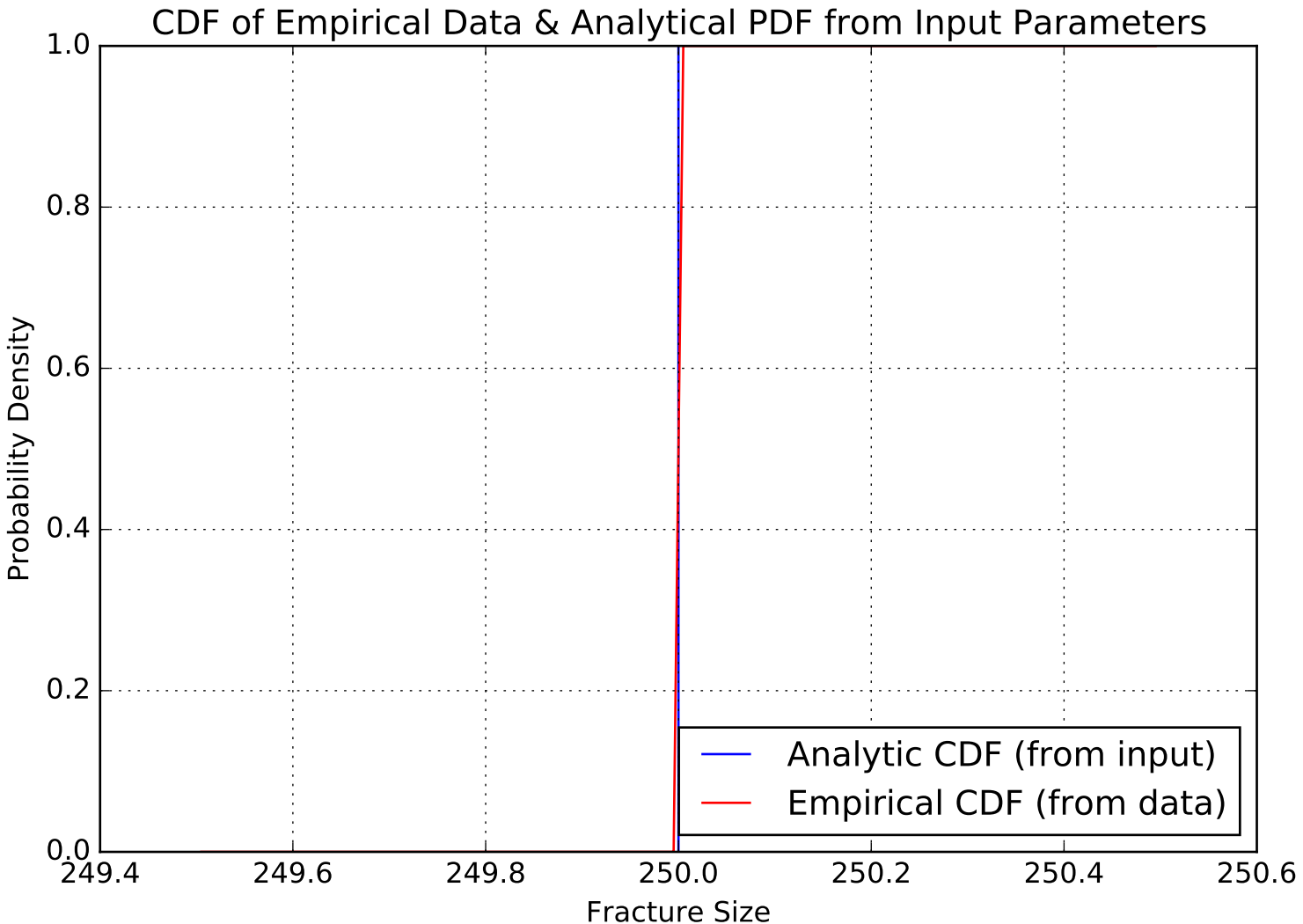

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #18
Analytical PDF from input parameters
Empirical data
Probability Density
Fracture Radius
0
20
40
60
80
100
249.5
249.6
249.7
249.8
249.9
249.9
250.0
250.1
250.2
250.3
250.4
250.5

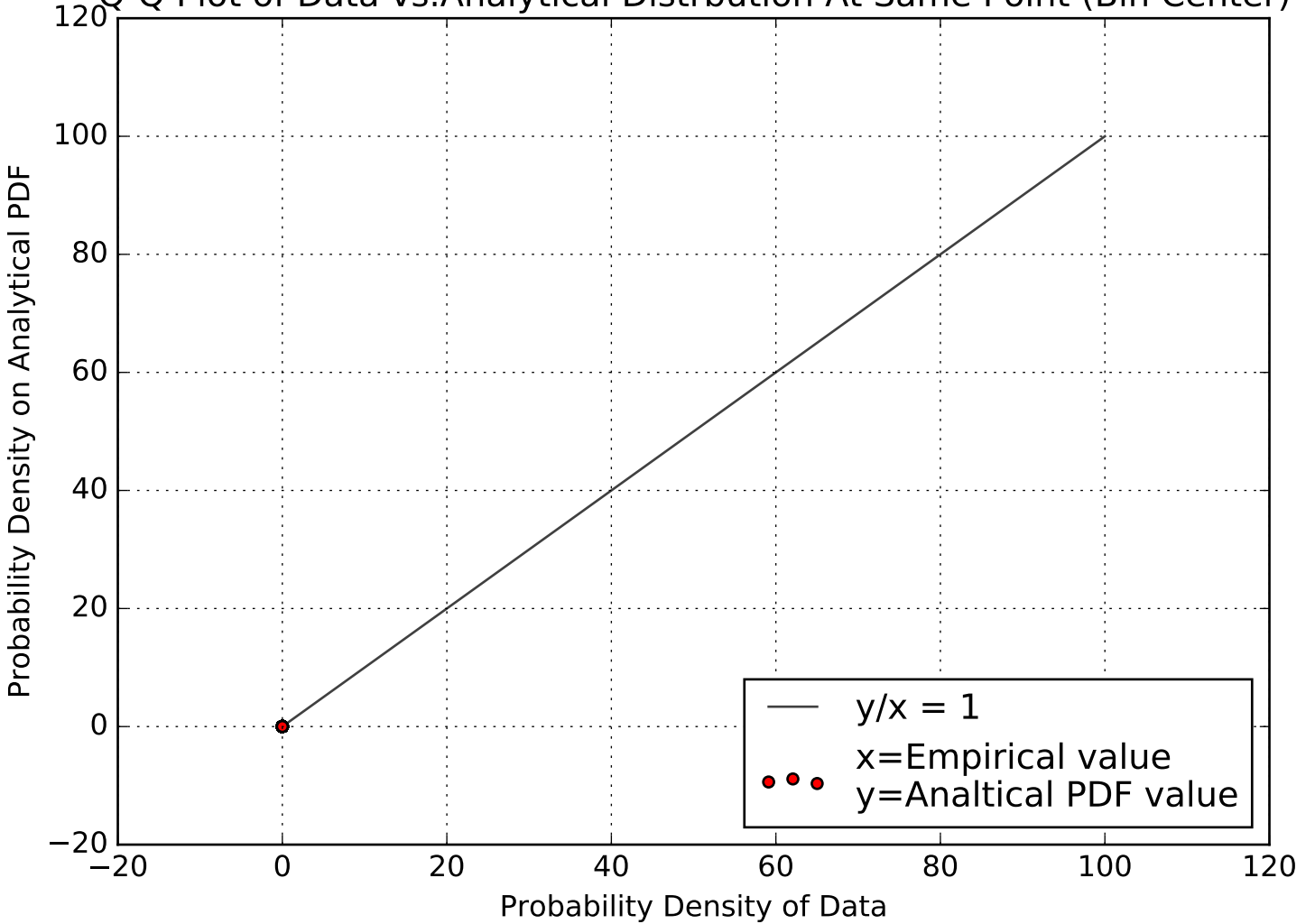

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
1.0
0.8
0.6
0.4
0.2
0.0
249.4
249.6
249.8
250.0
250.2
250.4
250.6
Fracture Size
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
120
100
80
60
40
20
0
−20
−20
0
20
40
60
80
100
120
y/x = 1
x=Empirical value
y=Analtical PDF value

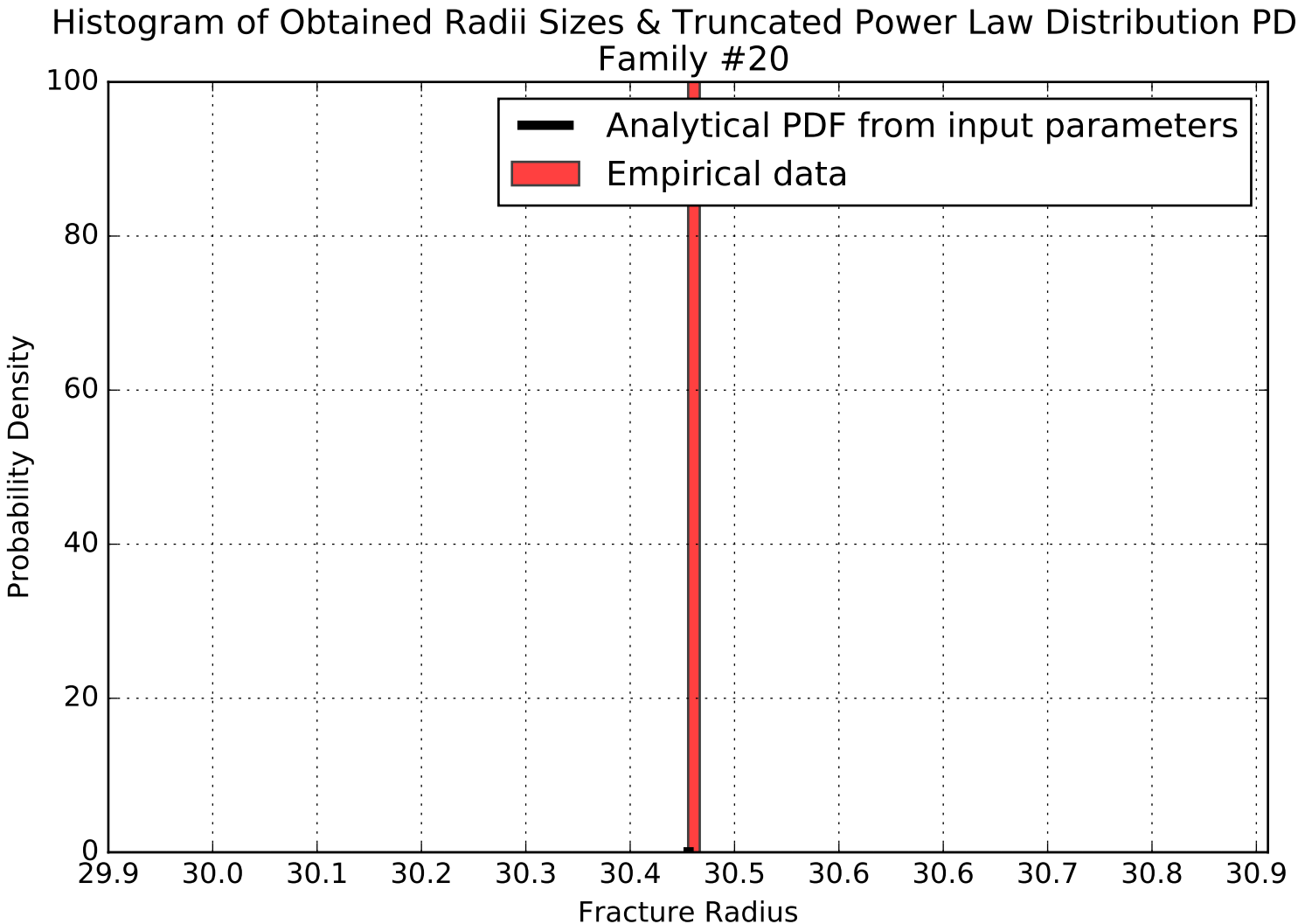
Rectanglular Family 19:
Global Family 19
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 0.0005
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 319.06 Degrees
Phi: 18.73 Degrees
Kappa: 35
Layer: 4 {-50, -45}
Distribution: Truncated Power-Law
Alpha: 2.6
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: -95.3851

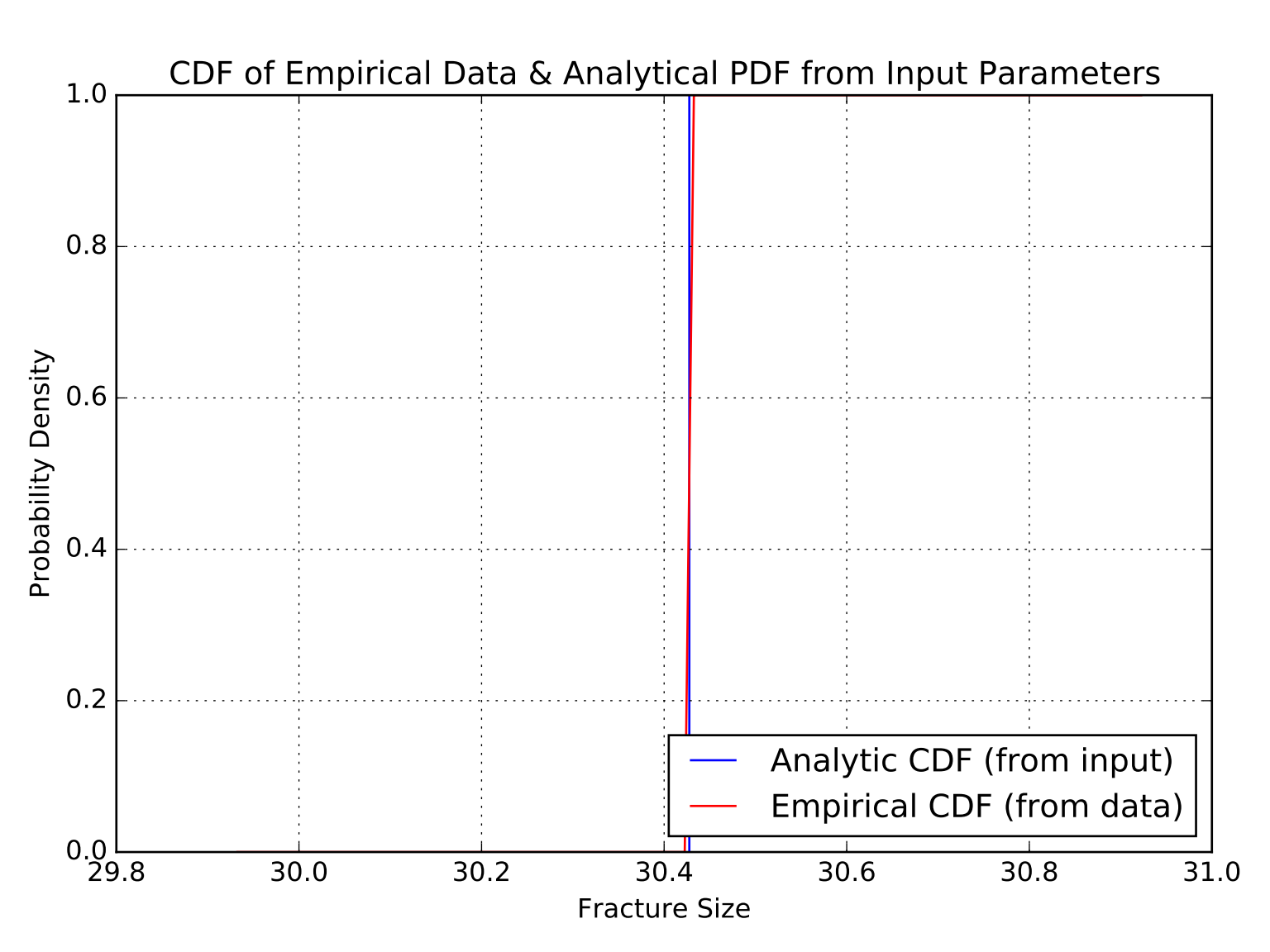

Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF.
Family #19
Analytical PDF from input parameters
Empirical data
Probability Density
Fracture Radius
0
20
40
60
80
100
249.5
249.6
249.7
249.8
249.9
249.9
250.0
250.1
250.2
250.3
250.4
250.5

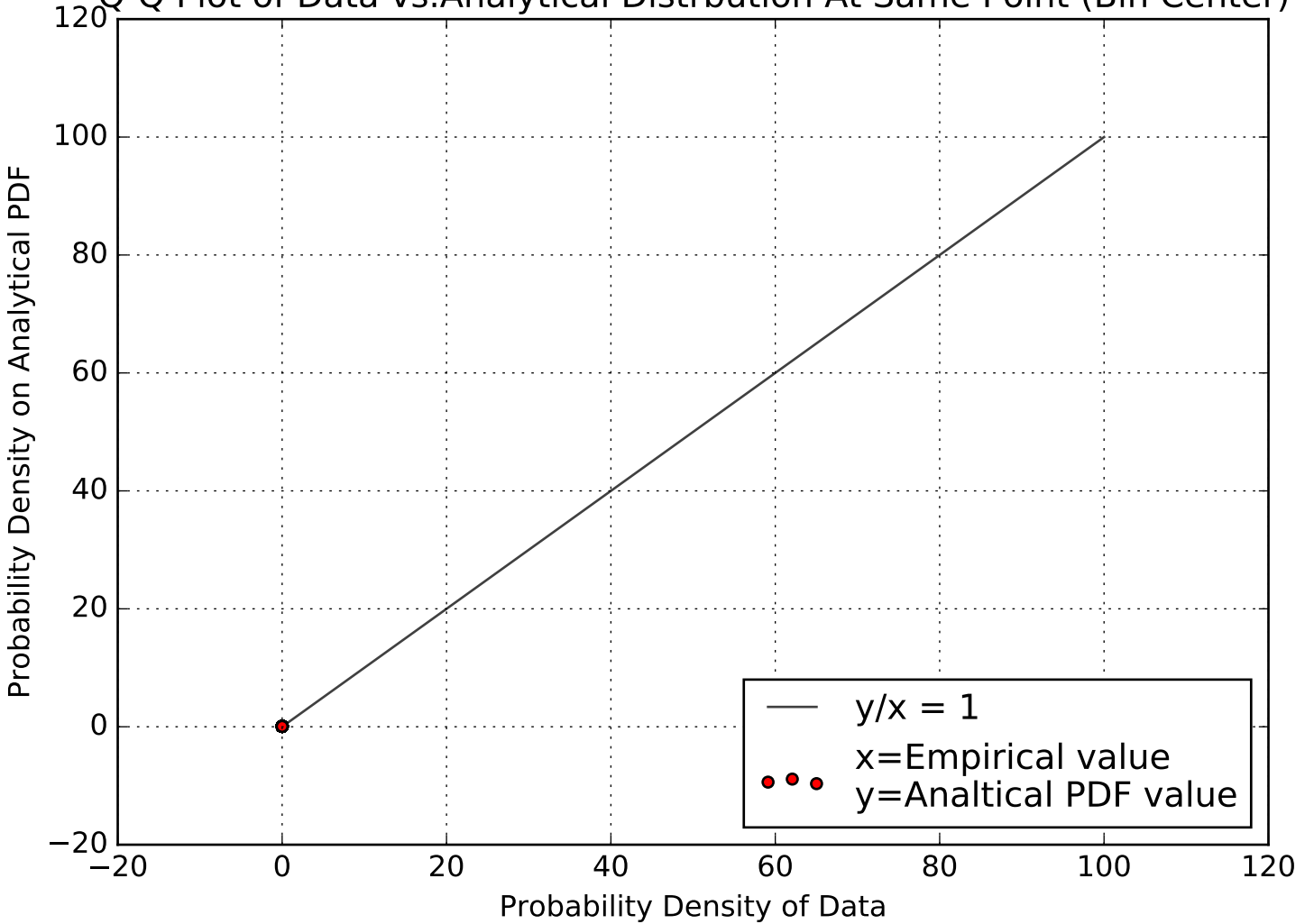

CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
1.0
0.8
0.6
0.4
0.2
0.0
249.4
249.6
249.8
250.0
250.2
250.4
250.6
Fracture Size
Analytic CDF (from input)
Empirical CDF (from data)

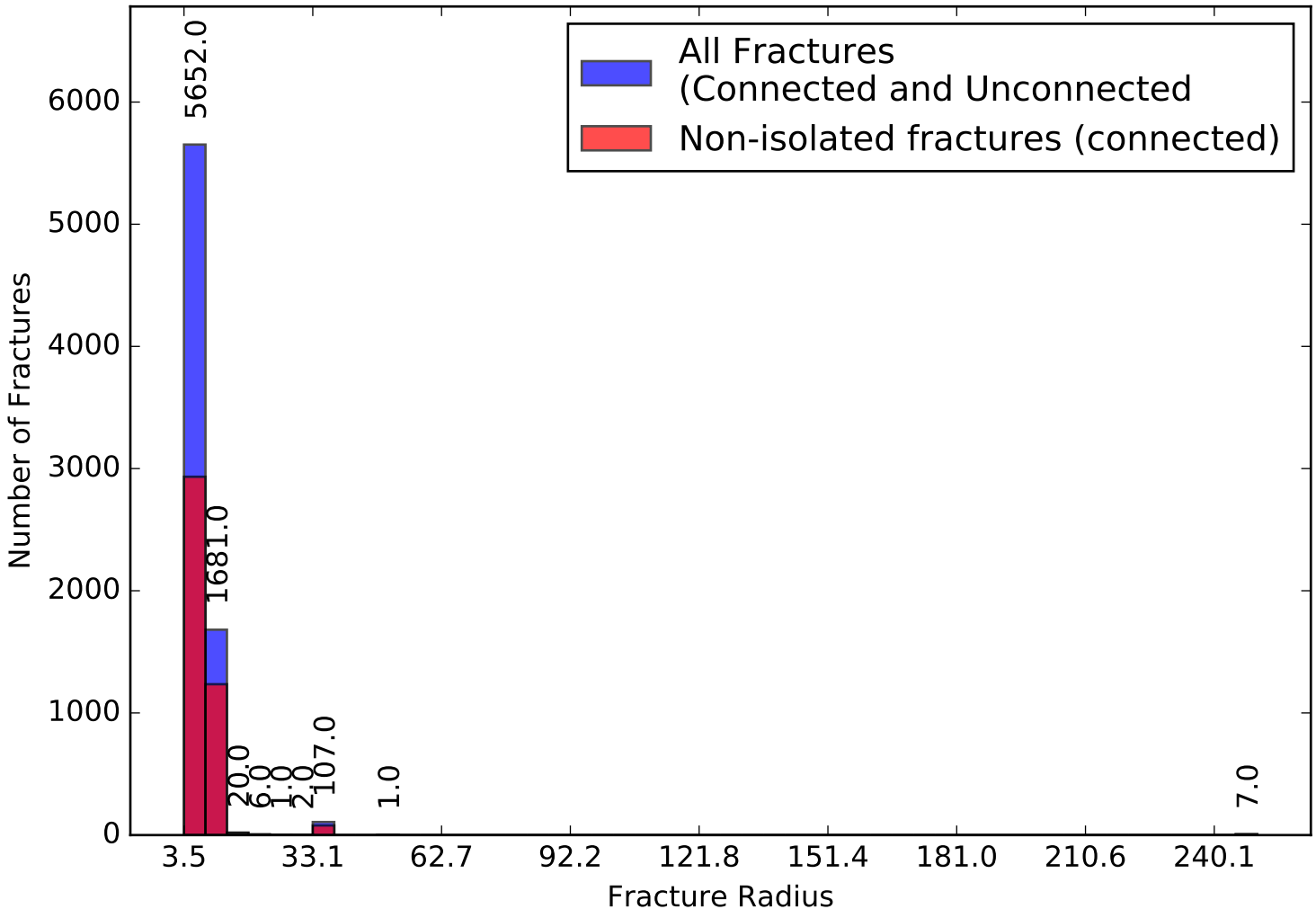

Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
120
100
80
60
40
20
0
−20
−20
0
20
40
60
80
100
120
y/x = 1
x=Empirical value
y=Analtical PDF value

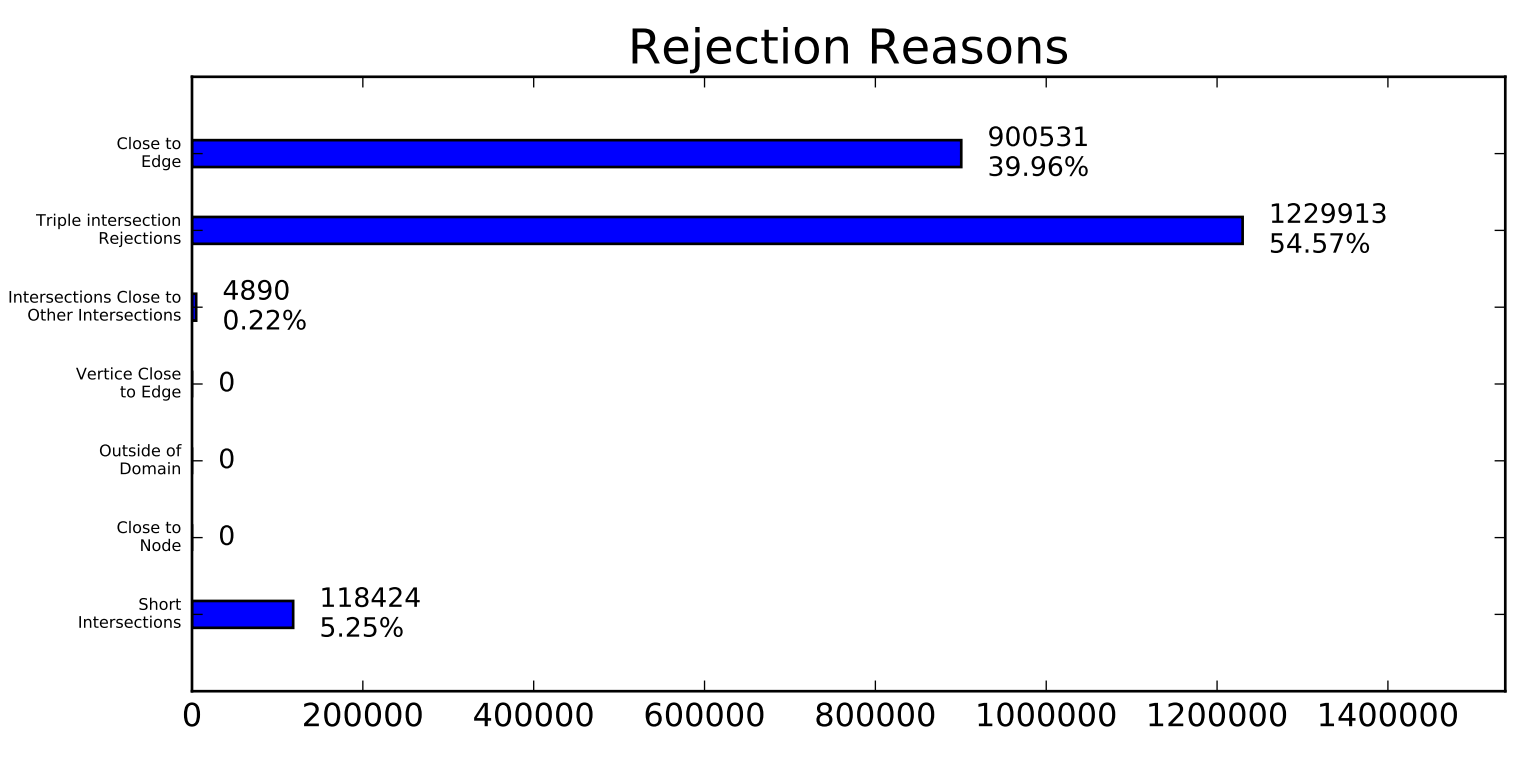
Rectanglular Family 20:
Global Family 20
Number of Vertices: 4
Aspect Ratio: 5
P32 (Fracture Intensity) Target: 5e-05
Beta (Rotation Around Normal Vector): 0 Degrees
Theta: 48.39 Degrees
Phi: 7.85 Degrees
Kappa: 35
Layer: 4 {-50, -45}
Distribution: Truncated Power-Law
Alpha: 2.01
Minimum Radius: 3.5m
Maximum Radius: 250m
Family Insertion Probability: 2.0915


Histogram of Obtained Radii Sizes & Truncated Power Law Distribution PDF
Family #20
Analytical PDF from input parameters
Empirical data
Probability Density
Fracture Radius
0
20
40
60
80
100
29.9
30.0
30.1
30.2
30.3
30.4
30.5
30.6
30.6
30.7
30.8
30.9


CDF of Empirical Data & Analytical PDF from Input Parameters
Probability Density
Fracture Size
1.0
0.8
0.6
0.4
0.2
0.0
29.8
30.0
30.2
30.4
30.6
30.8
31.0
Analytic CDF (from input)
Empirical CDF (from data)


Q-Q Plot of Data vs.Analytical Distrbution At Same Point (Bin Center)
Probability Density on Analytical PDF
Probability Density of Data
120
100
80
60
40
20
0
−20
−20
0
20
40
60
80
100
120
y/x = 1
x=Empirical value
y=Analtical PDF value


Fractures Sizes From All Families
All Fractures
(Connected and Unconnected
Non-isolated fractures (connected)
Number of Fractures
Fracture Radius
0
1000
2000
3000
4000
5000
6000
3.5
33.1
62.7
92.2
121.8
151.4
181.0
210.6
240.1
5652.0
1681.0
20.0
6.0
1.0
2.0
107.0
1.0
7.0


Rejection Reasons
Close to Edge
900531
39.96%
Triple intersection Rejections
1229913
54.57%
Intersections Close to Other Intersections
4890
0.22%
Vertice Close to Edge
0
Outside of Domain
0
Close to Node
0
Short Intersections
118424
5.25%
0
200000
400000
600000
800000
1000000
1200000
1400000