Simple Linear Model Selection Experiments for Unknown Intercept and Unknown Slope: N = 50, 75

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I. intercept at 0

III. intercept at 0.5

II. space in-between

IV. intercept at 0.5 with space in-between

V. less space in-between

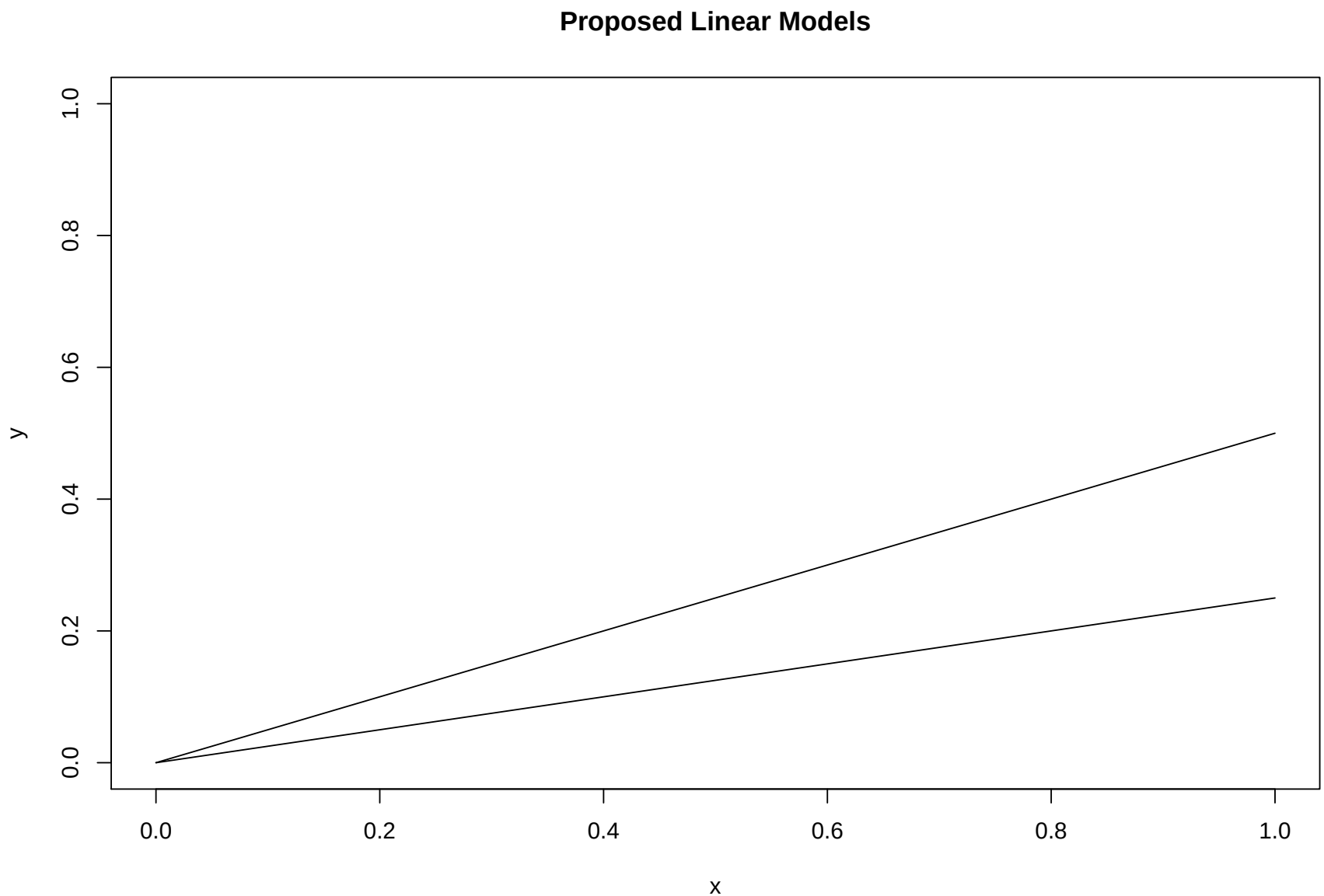
VI. linear vs quadratic

Some Observations

1. Call the criteria for the One-at-a-Time algorithm and the Fast algorithm G-Crit and F-Crit, resp. For any design $\mathbf{D}$, $\text{G-Crit}_{k\to\infty}\{\mathbf{D}\} = \text{F-Crit}\{\mathbf{D}\}$.
2. Call the MED generated by the One-at-a-Time algorithm $\mathbf{D}_G$, and the MED generated by the Fast algorithm $\mathbf{D}_F$. Both designs $\mathbf{D}_G$ and $\mathbf{D}_F$ are invariant to y-intercept. All that seems to matter in generating the design is the Wasserstein distance between f_0 and f_1 at each point $\mathbf{x} \in \mathbf{D}_\ell, \ell = \{G, F\}$.
3. Calculating an MED algorithm's criteria in log space (using logSumExp trick) might prevent any overflow that may be happening due to dividing by small values of $d(x, y)$.
4. Sometimes $\mathbf{D}_G$ does not seem to approach $\mathbf{D}_F$ as k gets larger (from observing the histograms). This seems to be the case when $N = 50$, but not when $N = 75$. i.e. N needs to be large enough?

I. intercept at 0

I. Proposed Linear Models



Histograms

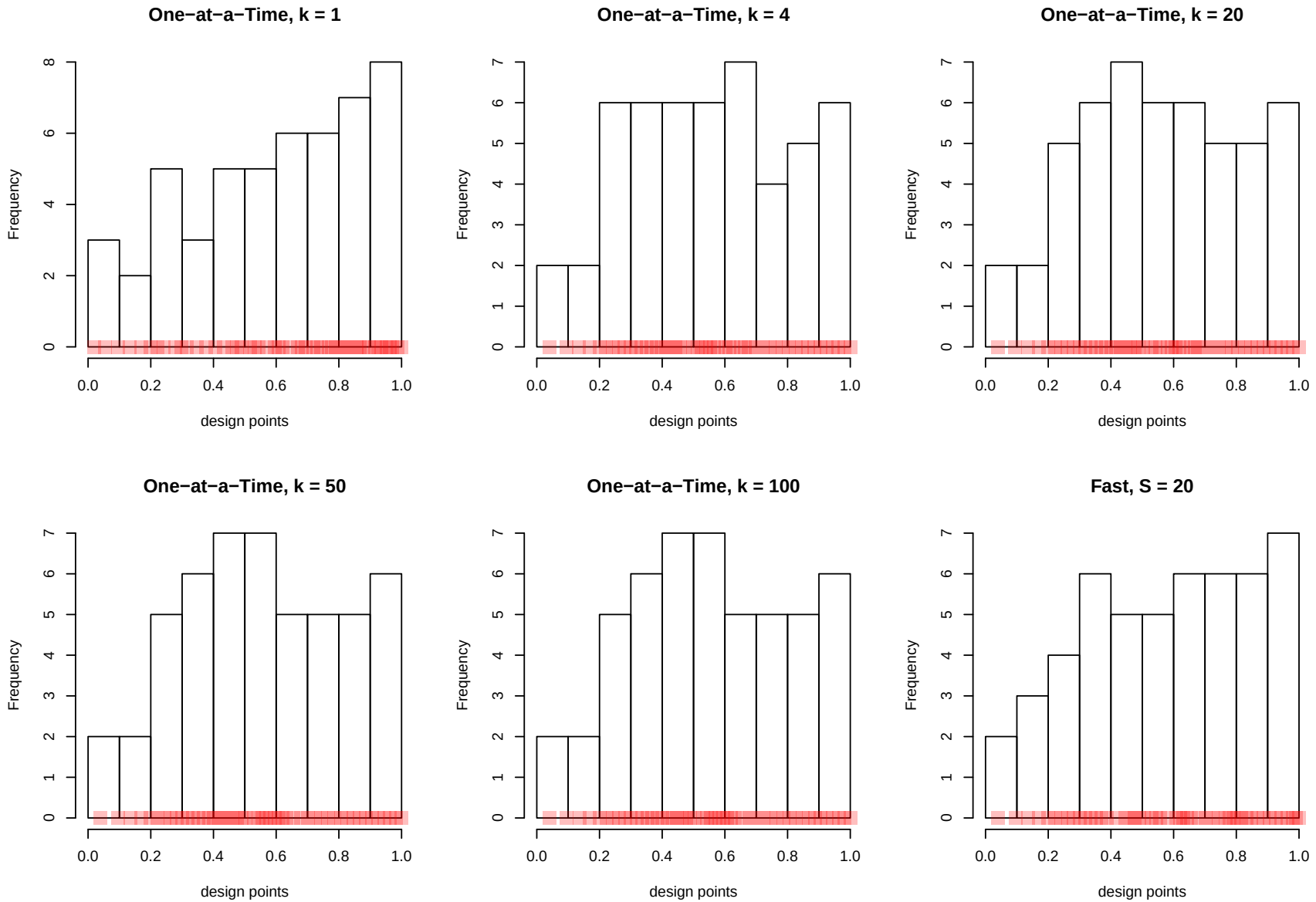
The following slides show histograms of:

- design points: $\mathbf{x} \in \mathbf{D}$
- charge function evaluated for each design point: $q(\mathbf{x})$, $\forall \mathbf{x} \in \mathbf{D}$
- pairwise distances: $d(\mathbf{x}_i, \mathbf{x}_j)$, $\forall \mathbf{x}_i, \mathbf{x}_j \in \mathbf{D}$
- pairwise potential energies: $\frac{q(\mathbf{x}_i)q(\mathbf{x}_j)}{d(\mathbf{x}_i,\mathbf{x}_j)}$, $\forall \mathbf{x}_i, \mathbf{x}_j \in \mathbf{D}$

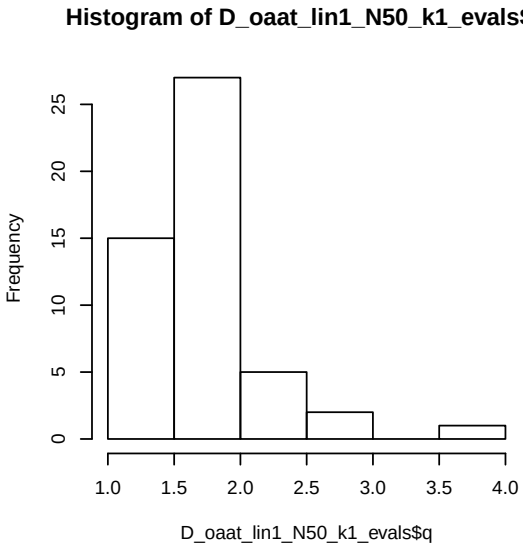
for each of the MED designs considered:

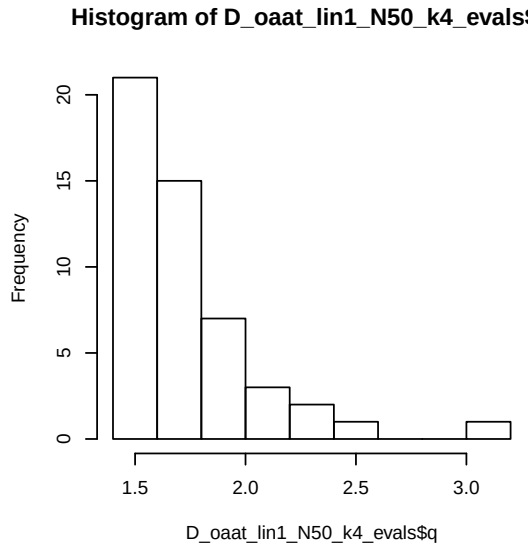
- MED generated by the One-at-a-Time algorithm, with power $k = 1, 4, 20, 50, 100$
- MED generated by the Fast algorithm, with number of stages $S = 20$

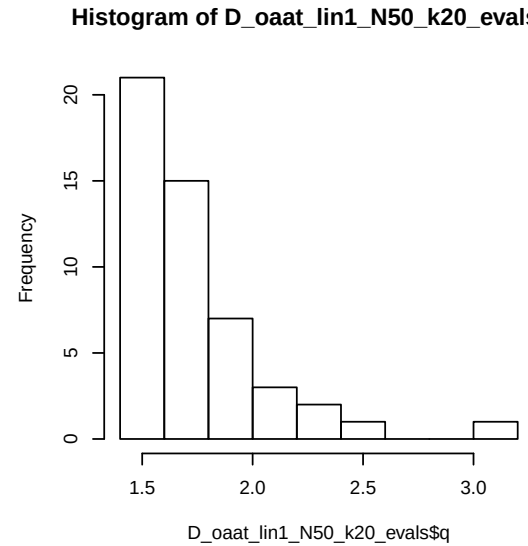
Designs, N = 50

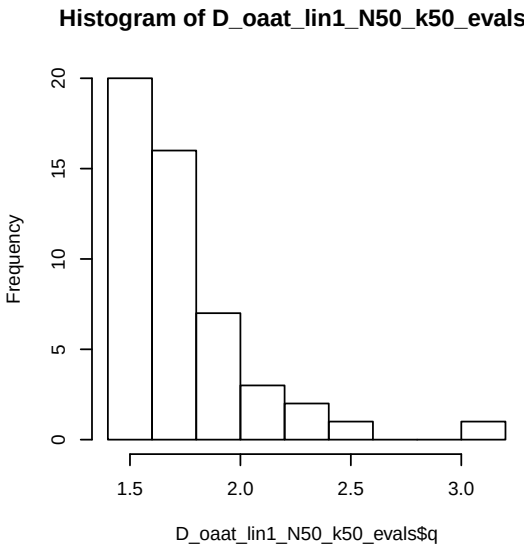

One−at−a−Time, k = 1
One−at−a−Time, k = 4
One−at−a−Time, k = 20
One−at−a−Time, k = 50
One−at−a−Time, k = 100
Fast, S = 20
Frequency
design points
0.0
0.2
0.4
0.6
0.8
1.0

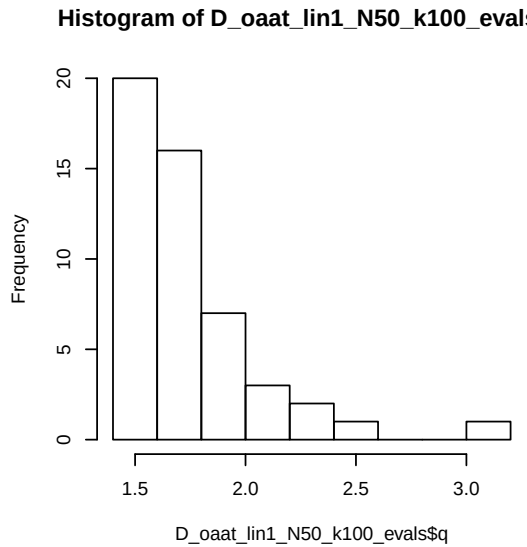
Evaluations of q(.)

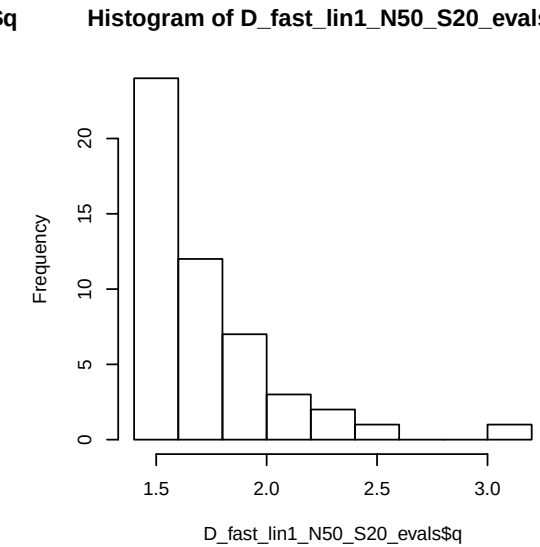




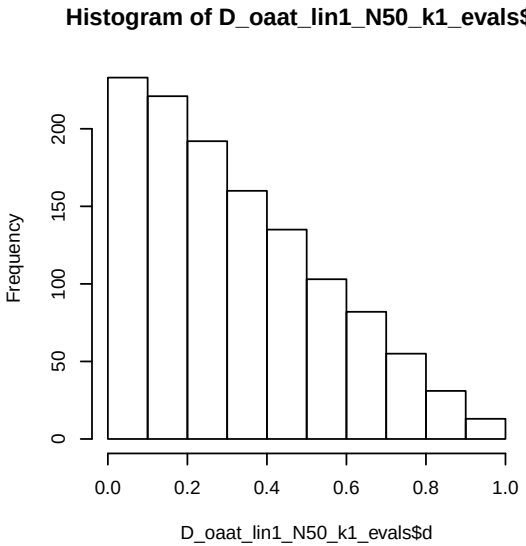


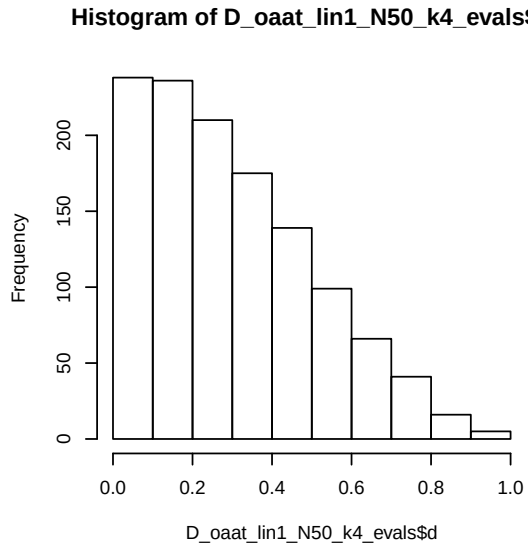


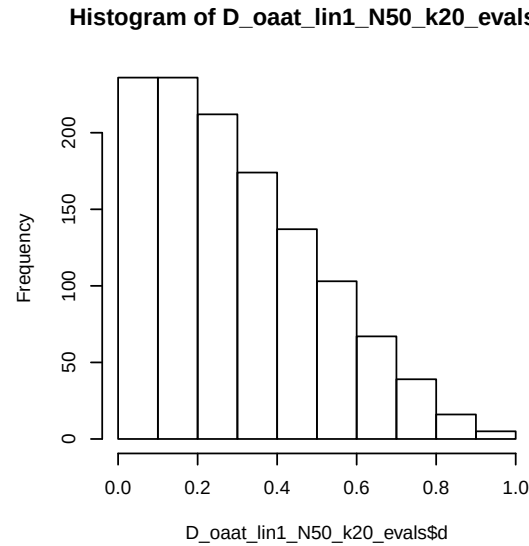


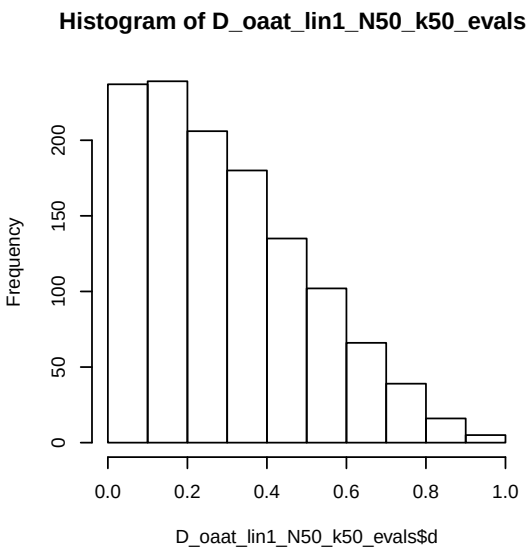


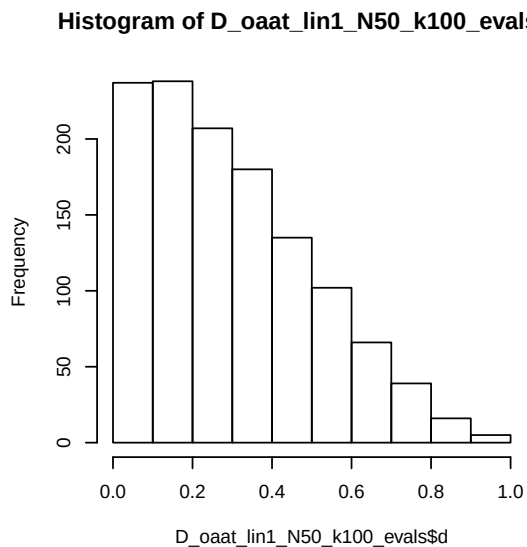
Pairwise distances of design points

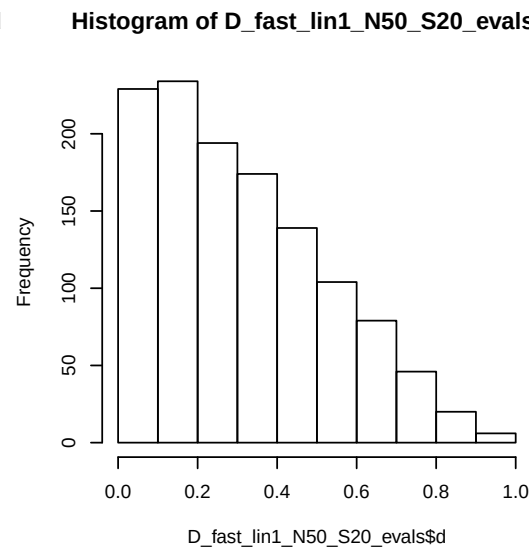




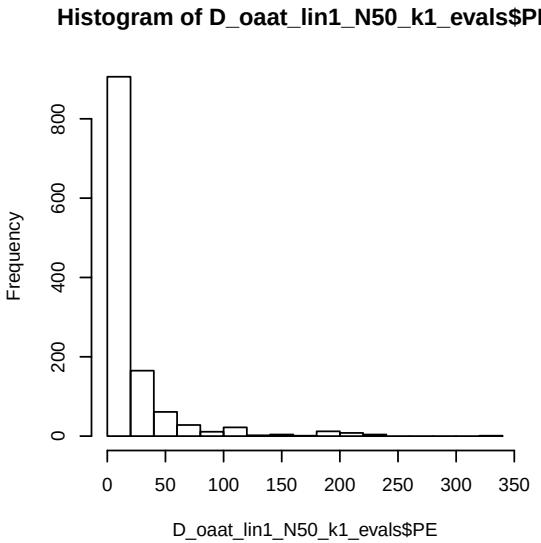


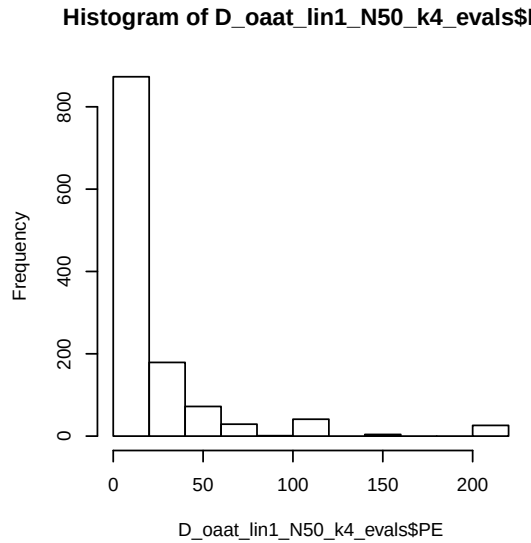


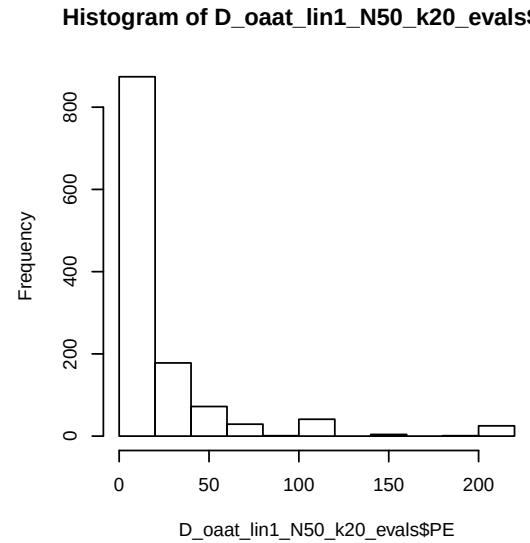


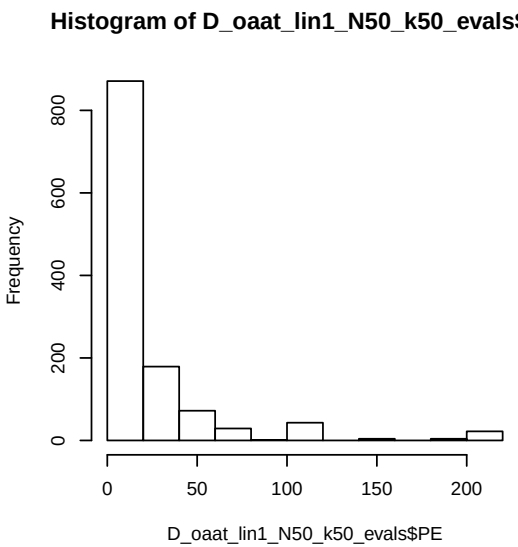


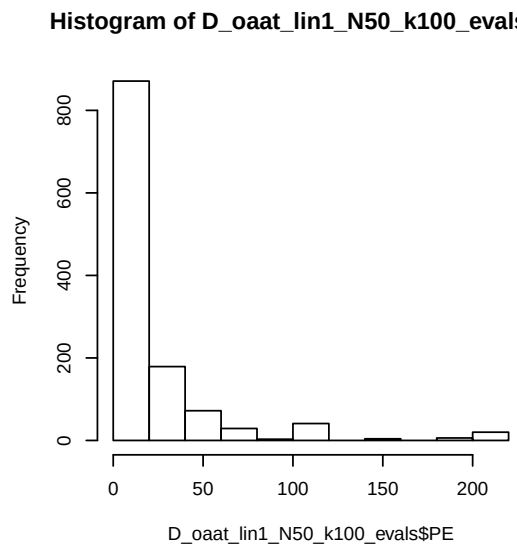
Pairwise potential energies of design points

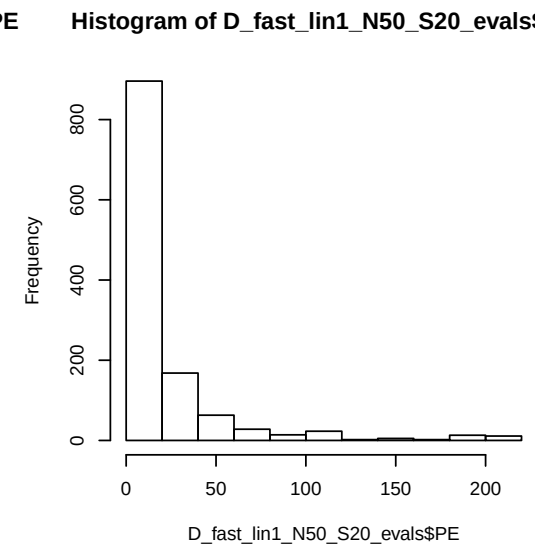








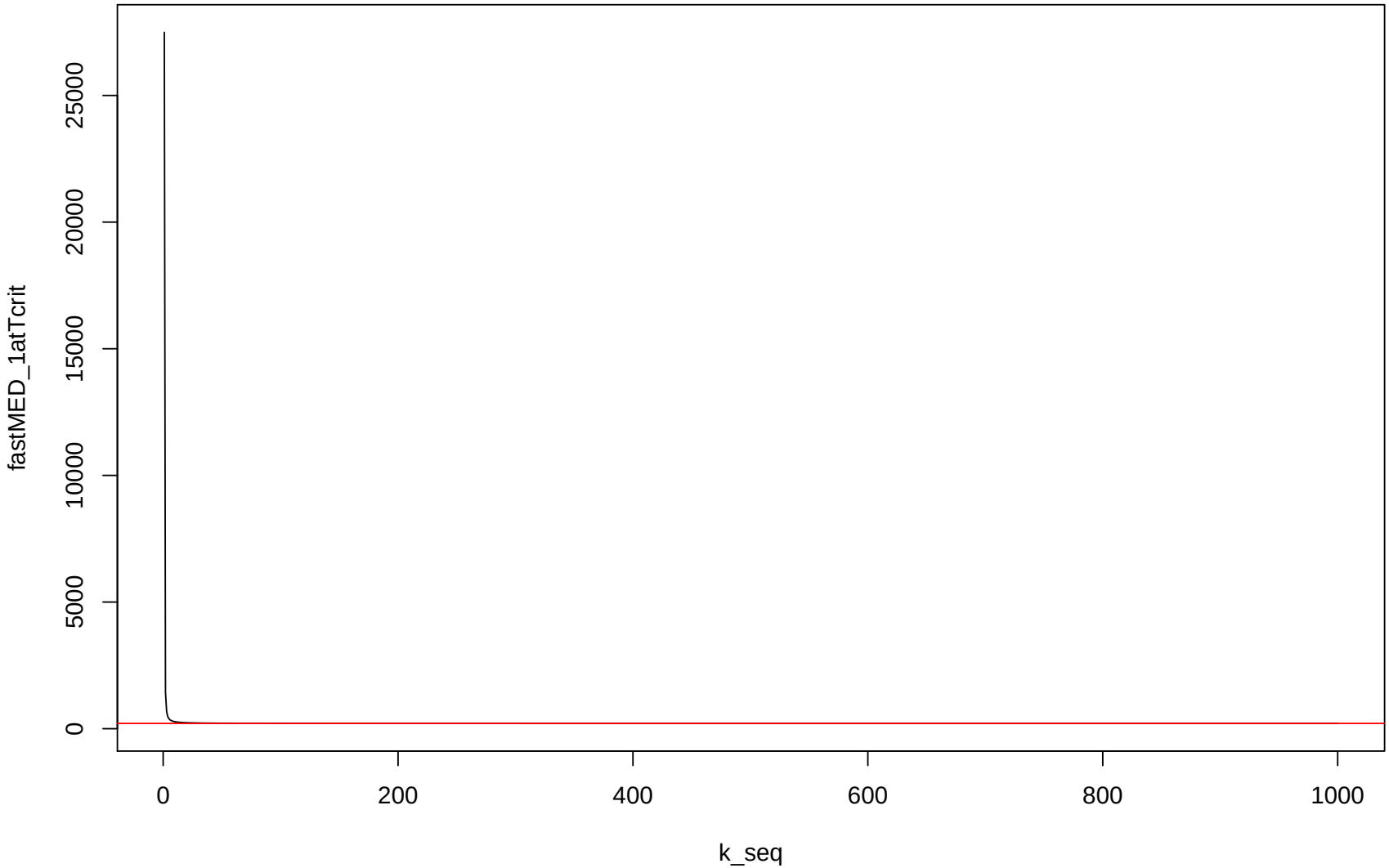




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	27.105	28.693	28.57	28.757	28.749	27.492
Fast	335.26	209.63	208.43	208.1	208.06	208.15
1atT(k=4)	502.21	484.28	480.28	480.12	479.88	469.12
Mean(D)	0.59672	0.55135	0.55316	0.55152	0.55167	0.5767
sd(D)	0.28173	0.25876	0.25893	0.25844	0.25845	0.26824

Fast MED Evaluated at One-at-a-Time Criterion

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## [1] "Fast Criterion :  208.149982615237"

## [1] "One-at-a-Time Criterion at max k :  208.175089060583"
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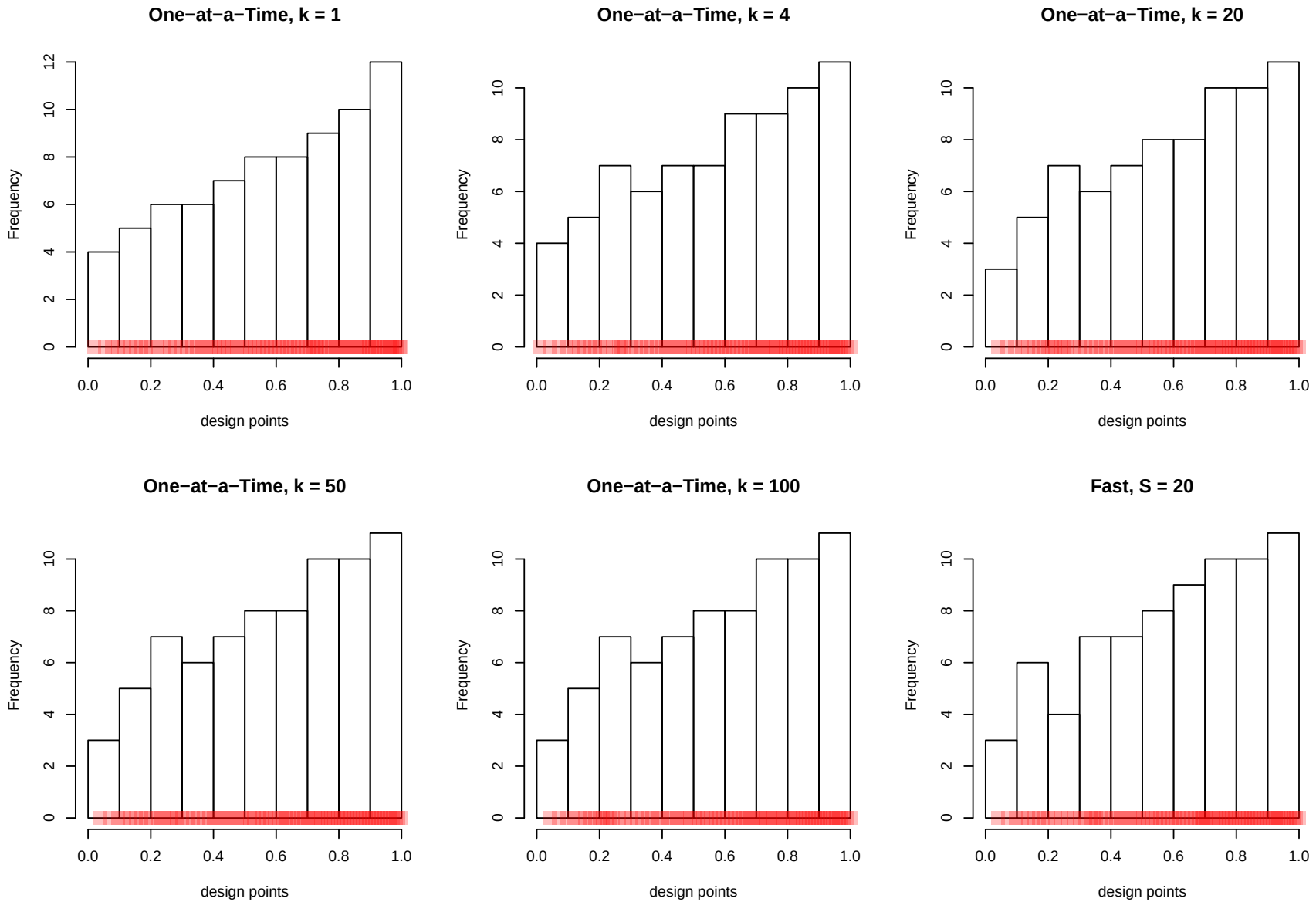
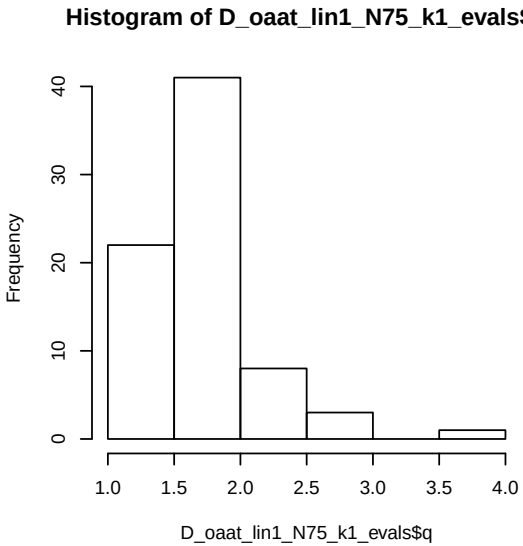
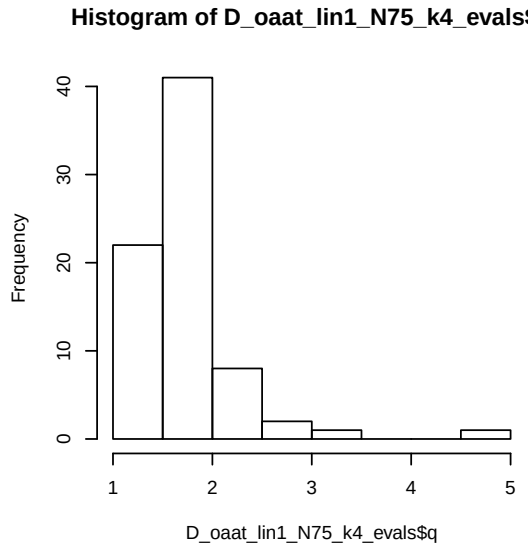
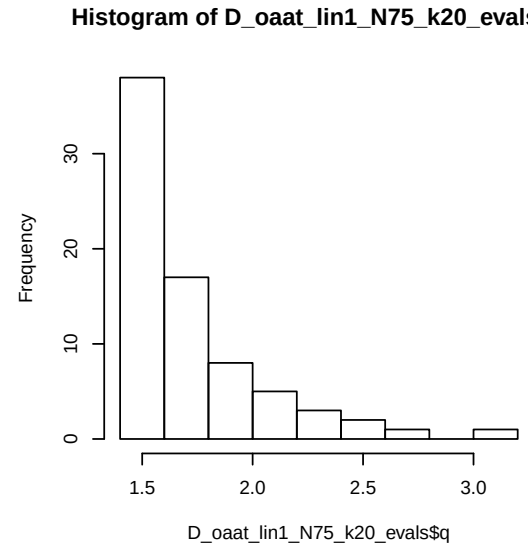
Designs, N = 75

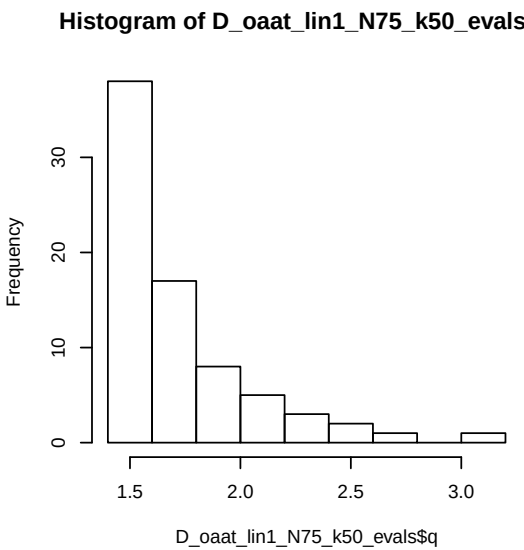

One−at−a−Time, k = 1
One−at−a−Time, k = 4
One−at−a−Time, k = 20
One−at−a−Time, k = 50
One−at−a−Time, k = 100
Fast, S = 20
Frequency
design points
0.0
0.2
0.4
0.6
0.8
1.0

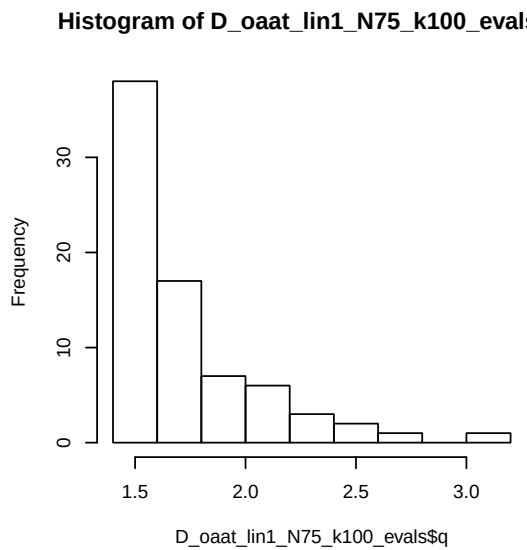
Evaluations of q(.)

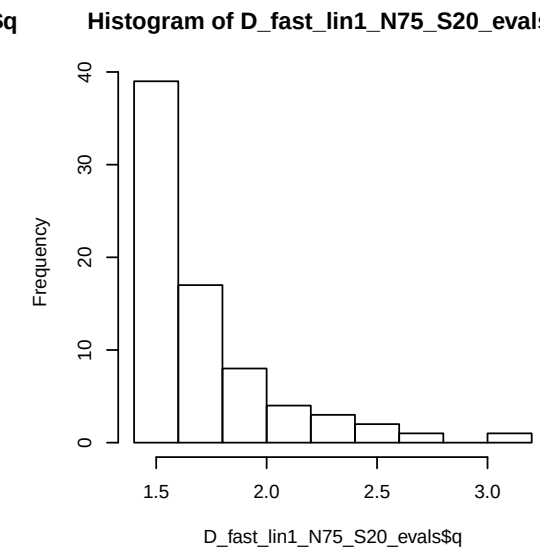




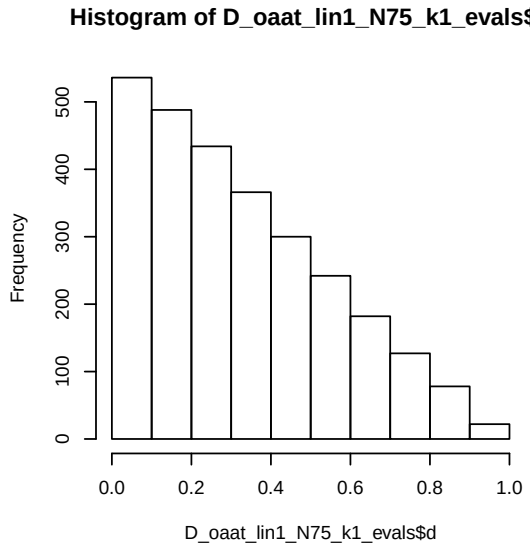


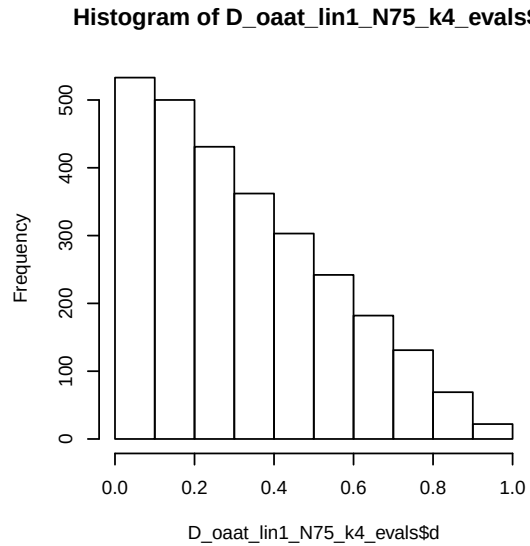


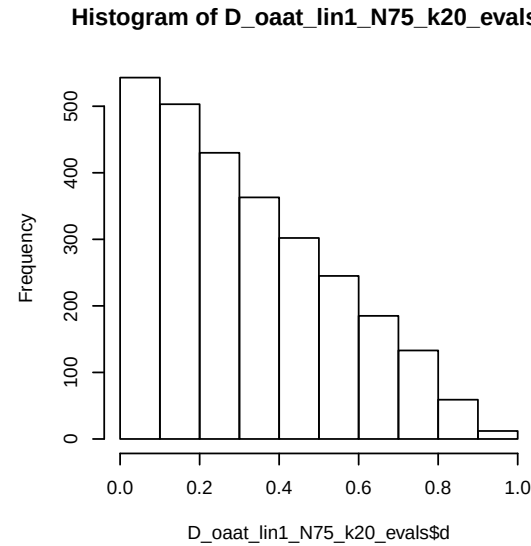


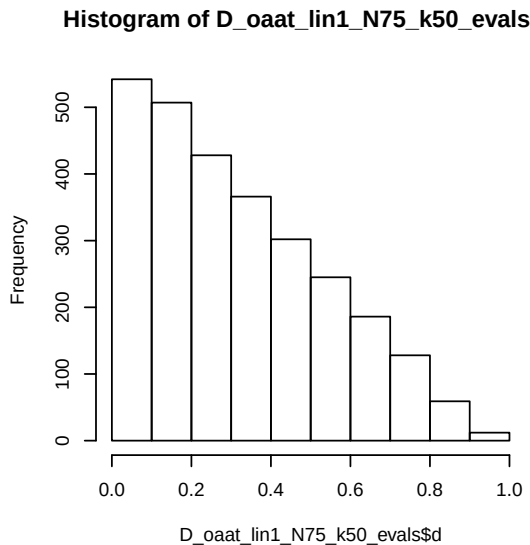


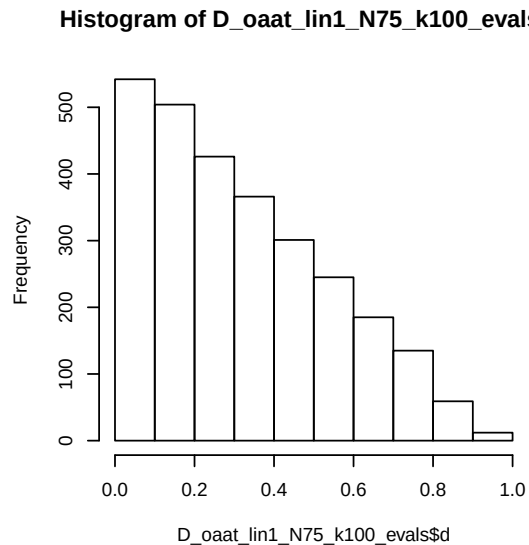
Pairwise distances of design points

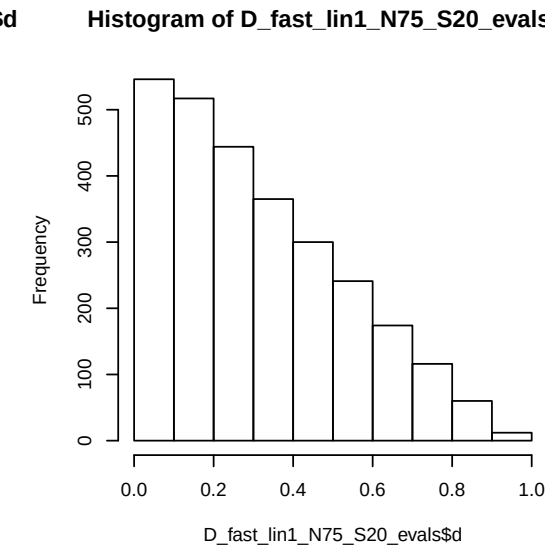




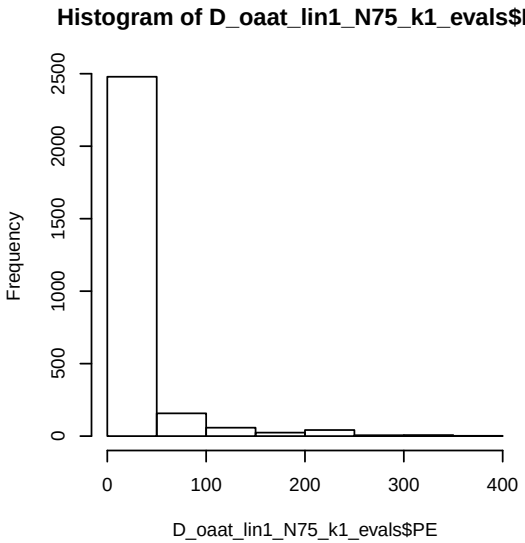


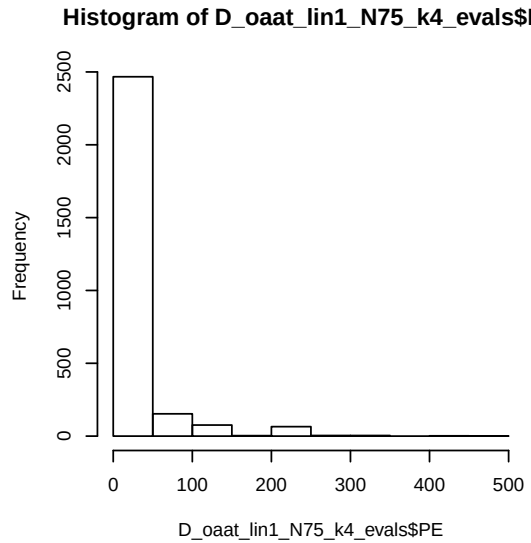


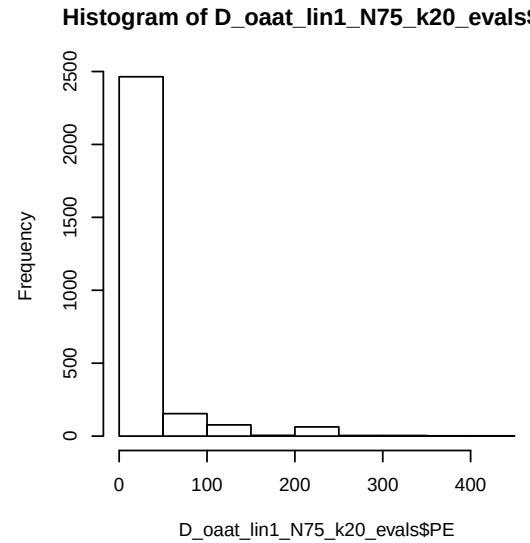


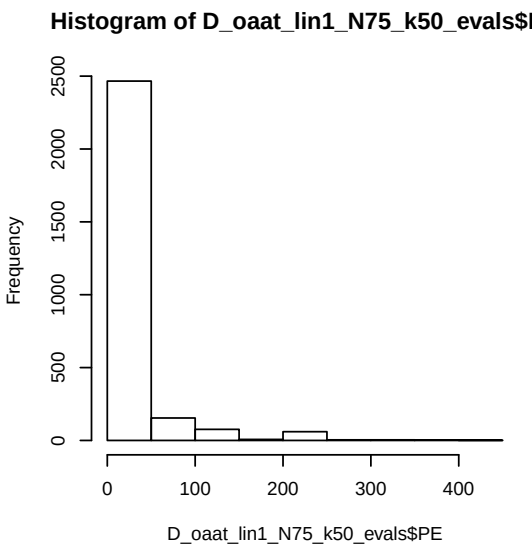


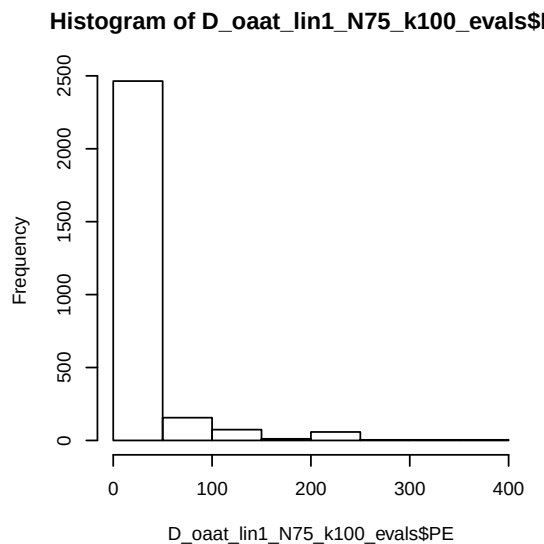
Pairwise potential energies of design points

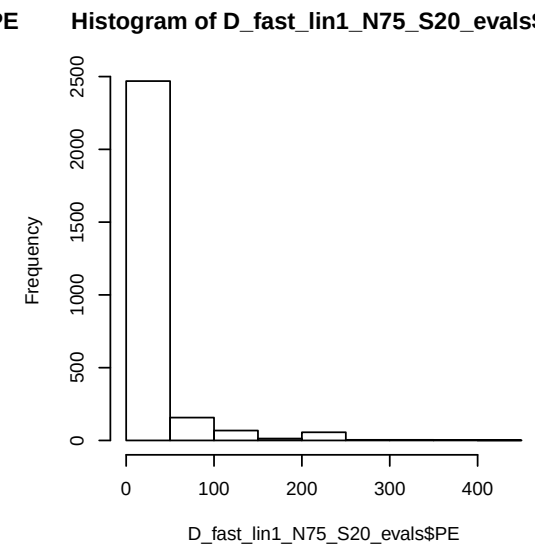








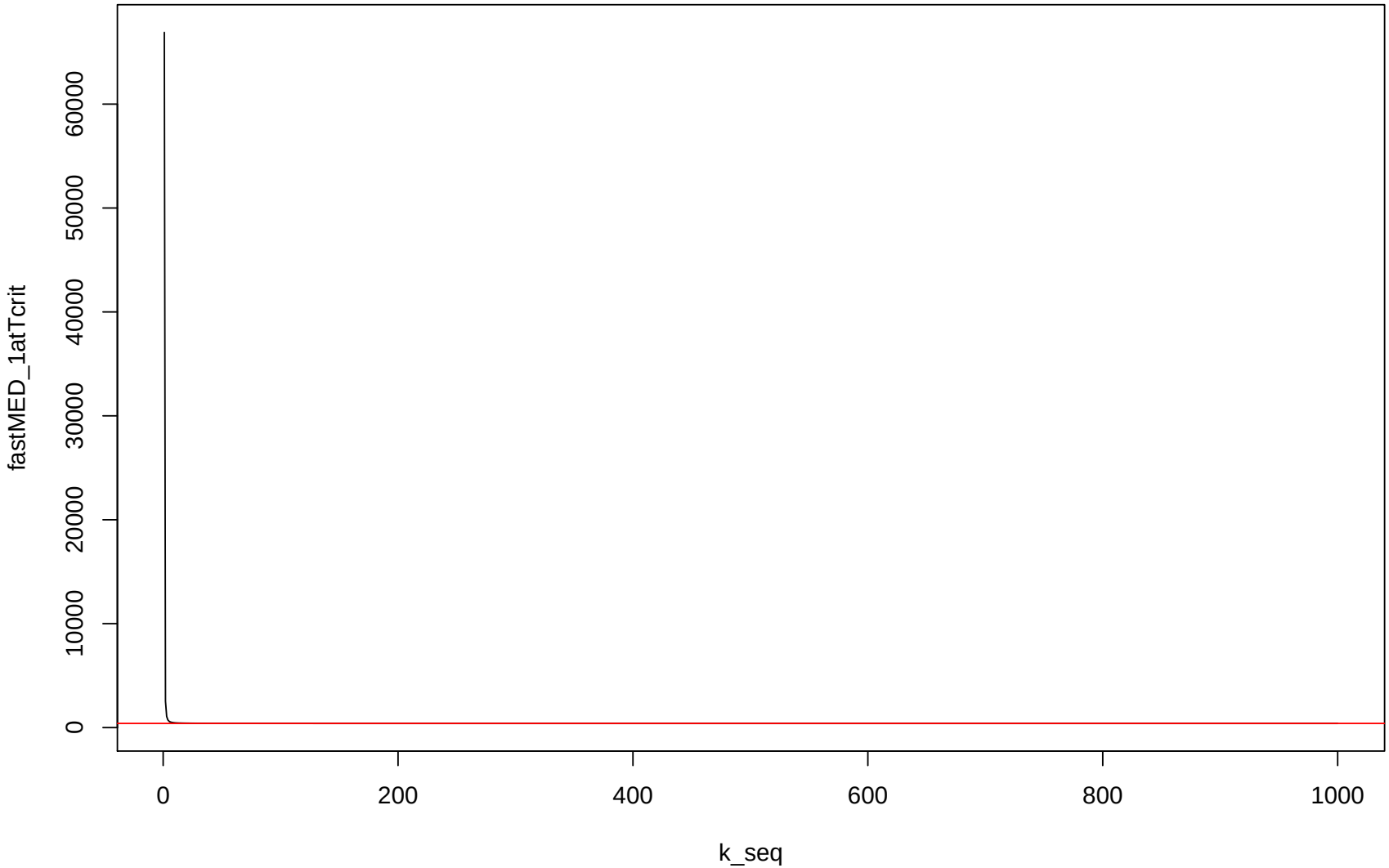




Comparing Evaluations for each N = 75 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	66.27	66.737	66.912	66.844	67.018	66.905
Fast	373.54	451.94	402	400.01	399.65	401.03
1atT(k=4)	733.35	742.62	745.74	745.07	745.91	744.47
Mean(D)	0.5874	0.58103	0.58511	0.58596	0.58528	0.59326
sd(D)	0.28154	0.28039	0.27604	0.27536	0.2764	0.27154

Fast MED Evaluated at One-at-a-Time Criterion

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## [1] "Fast Criterion :  401.030941543323"

## [1] "One-at-a-Time Criterion at max k :  401.030941880717"
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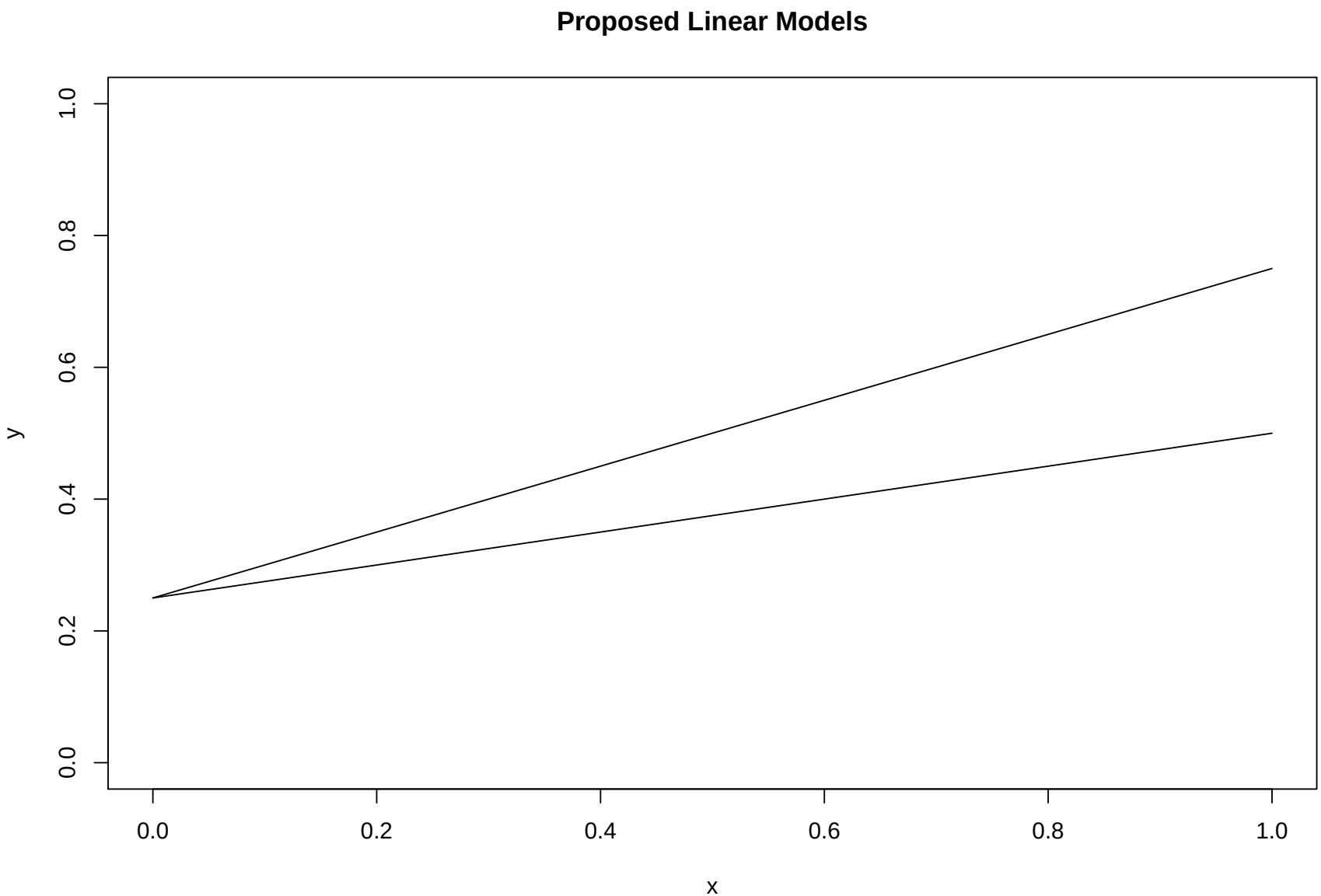
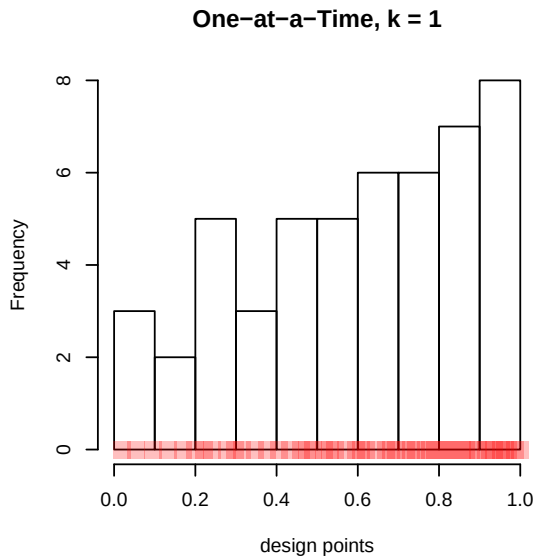
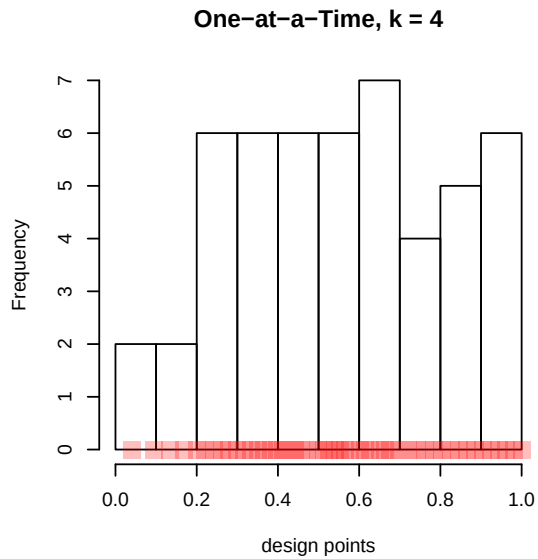
III. intercept at 0.5

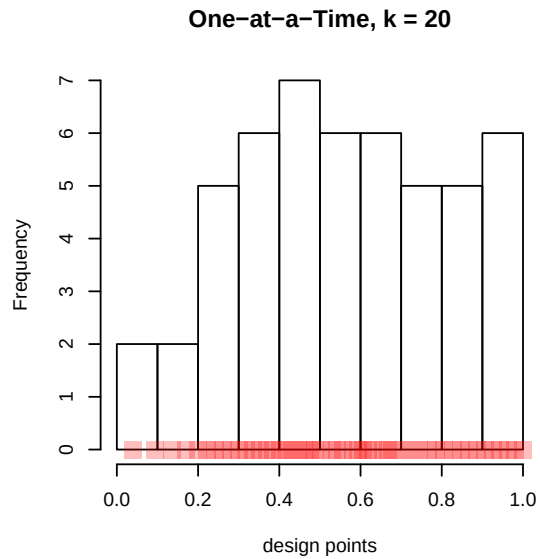
III. Proposed Linear Models

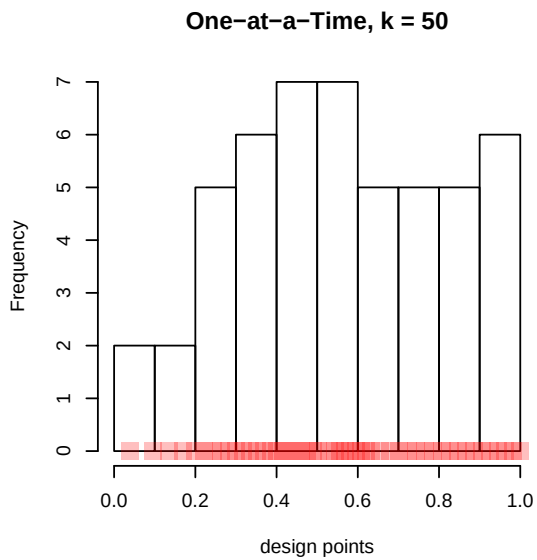


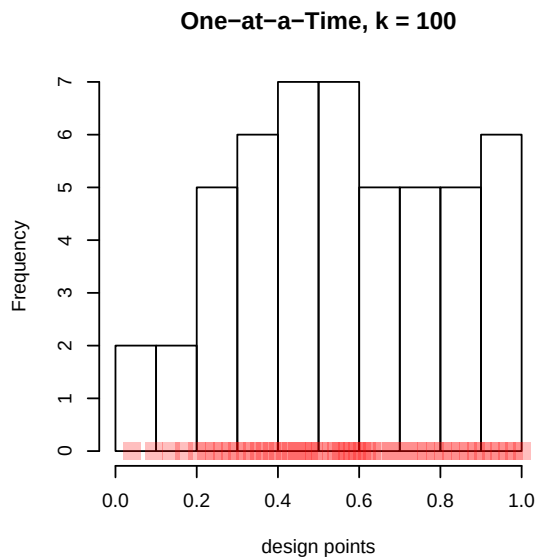
Designs, N = 50

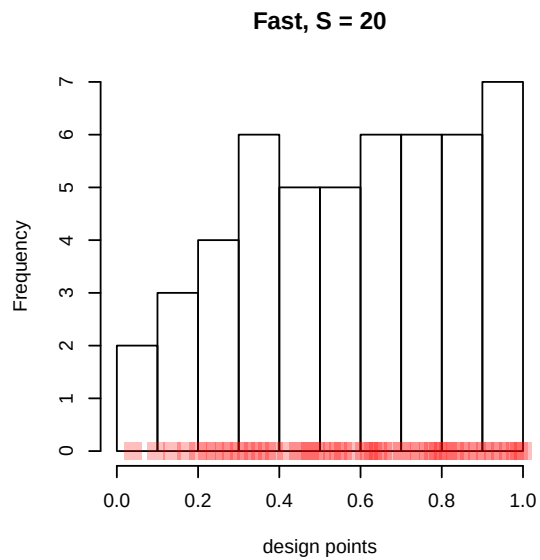

One−at−a−Time, k = 1
Frequency
design points


One−at−a−Time, k = 4
Frequency
design points

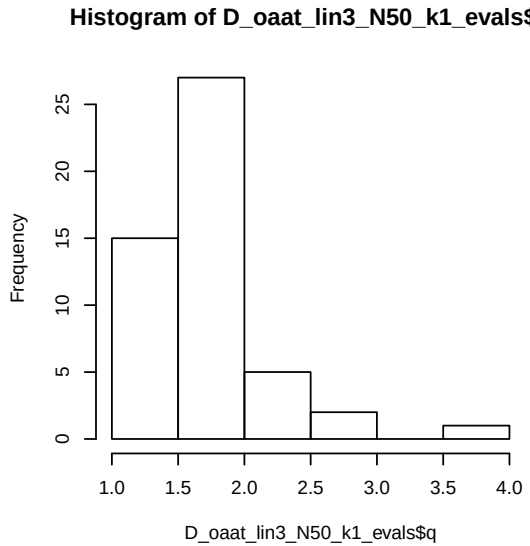

One−at−a−Time, k = 20
Frequency
design points

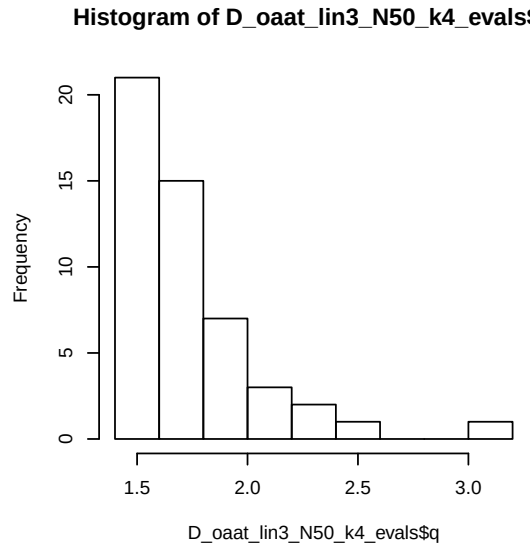

One−at−a−Time, k = 50
Frequency
design points

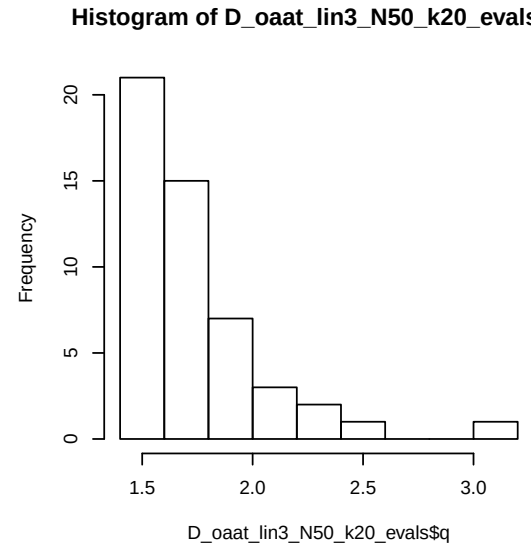

One−at−a−Time, k = 100
Frequency
design points

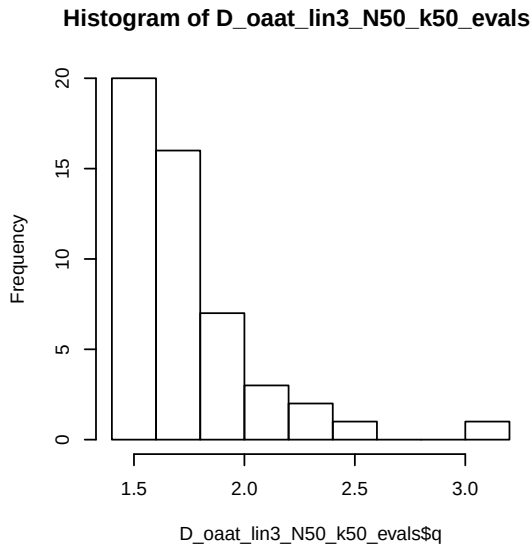

Fast, S = 20
Frequency
design points

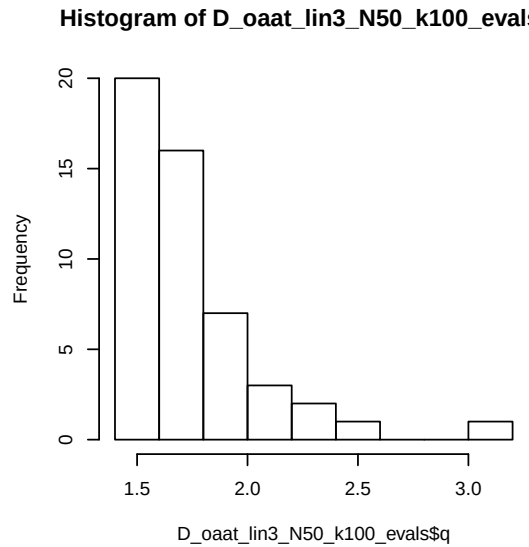
Evaluations of q(.)

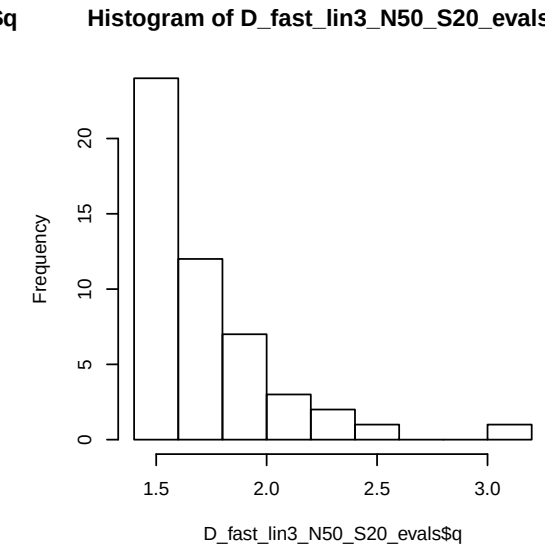




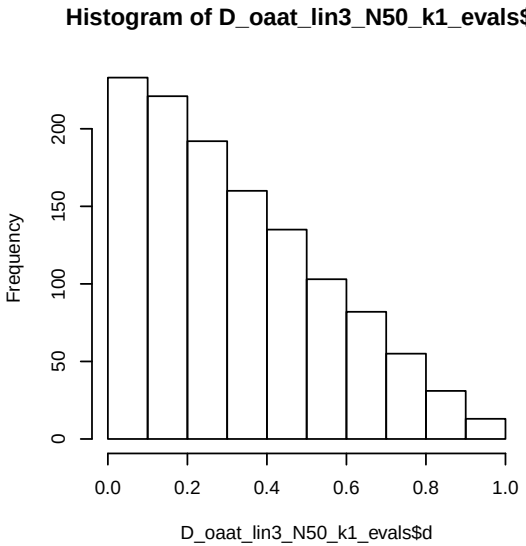


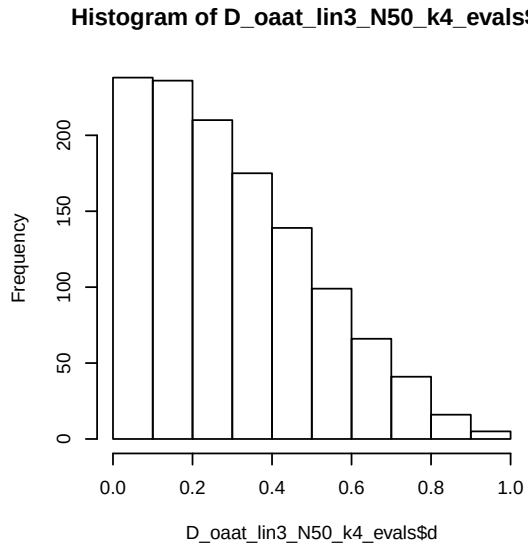


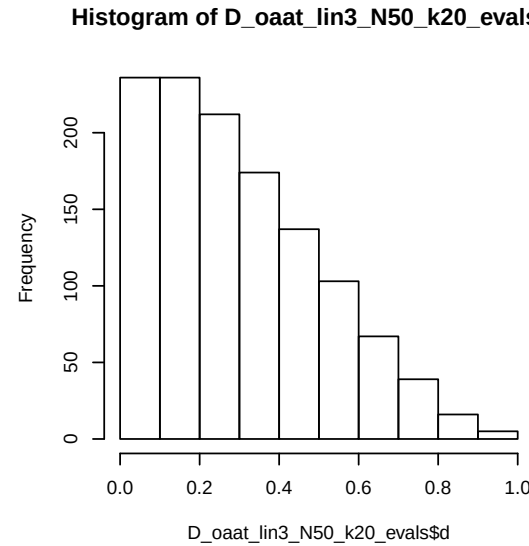


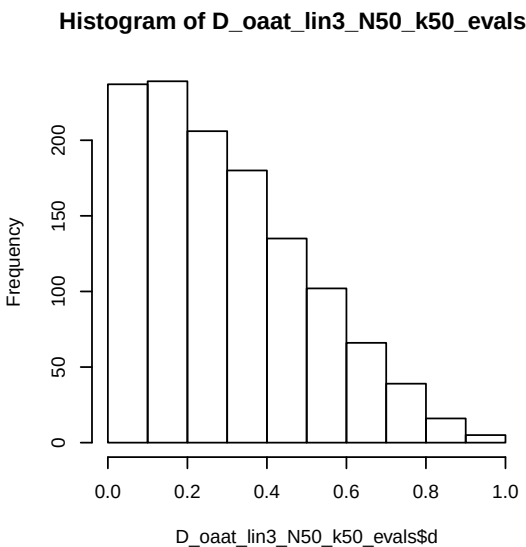


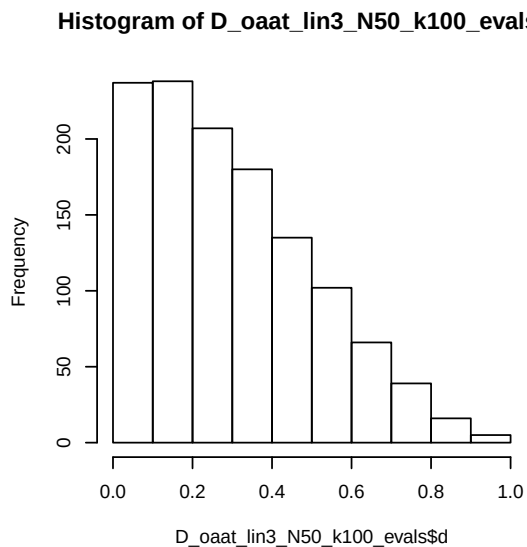
Pairwise distances of design points

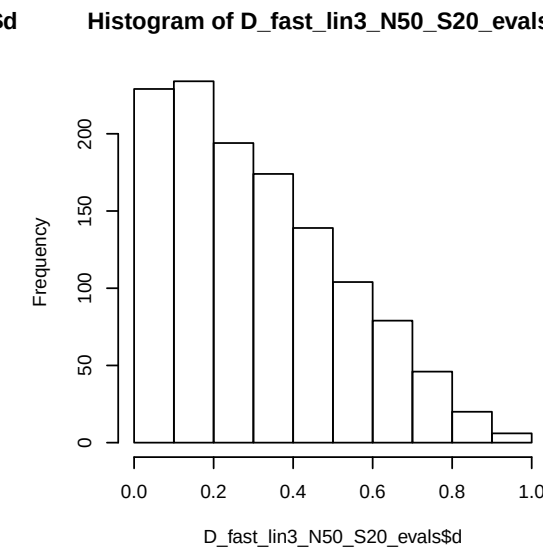




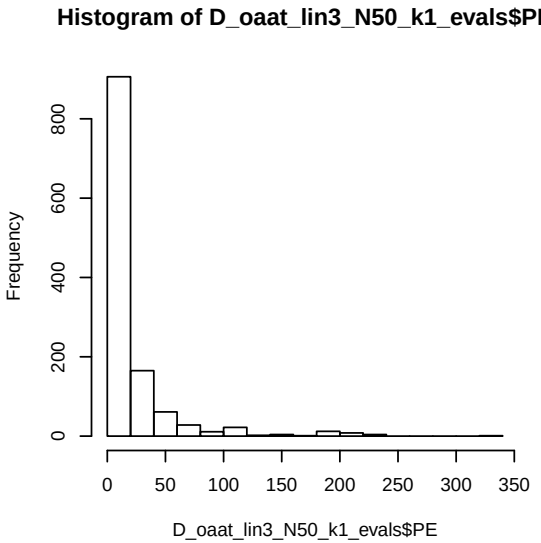


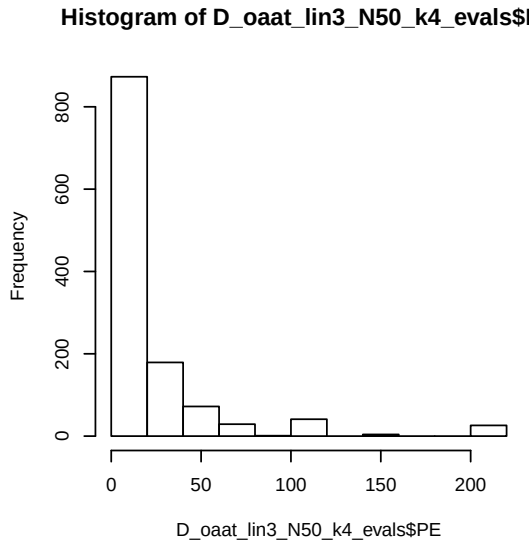


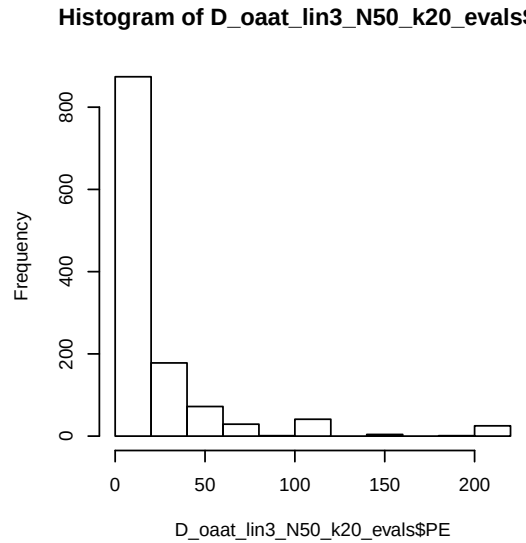


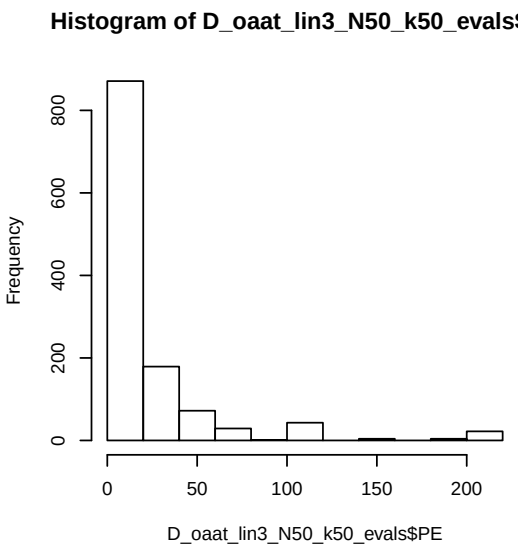


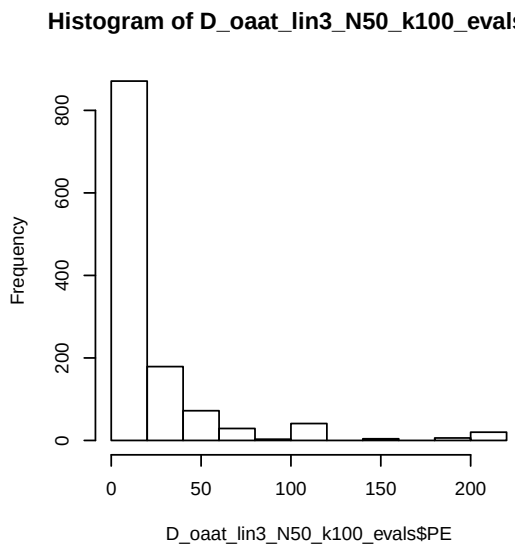
Pairwise potential energies of design points

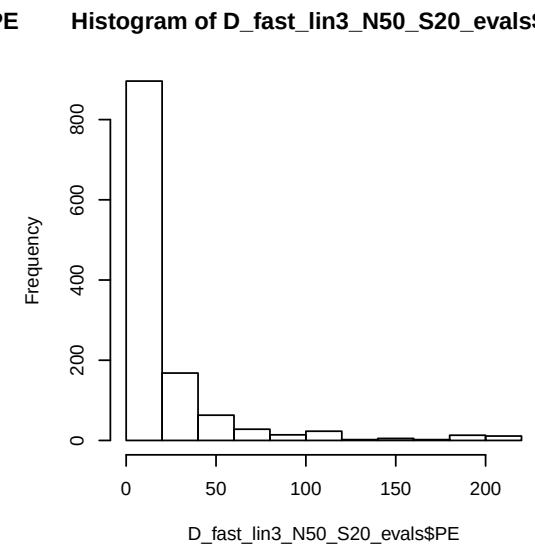








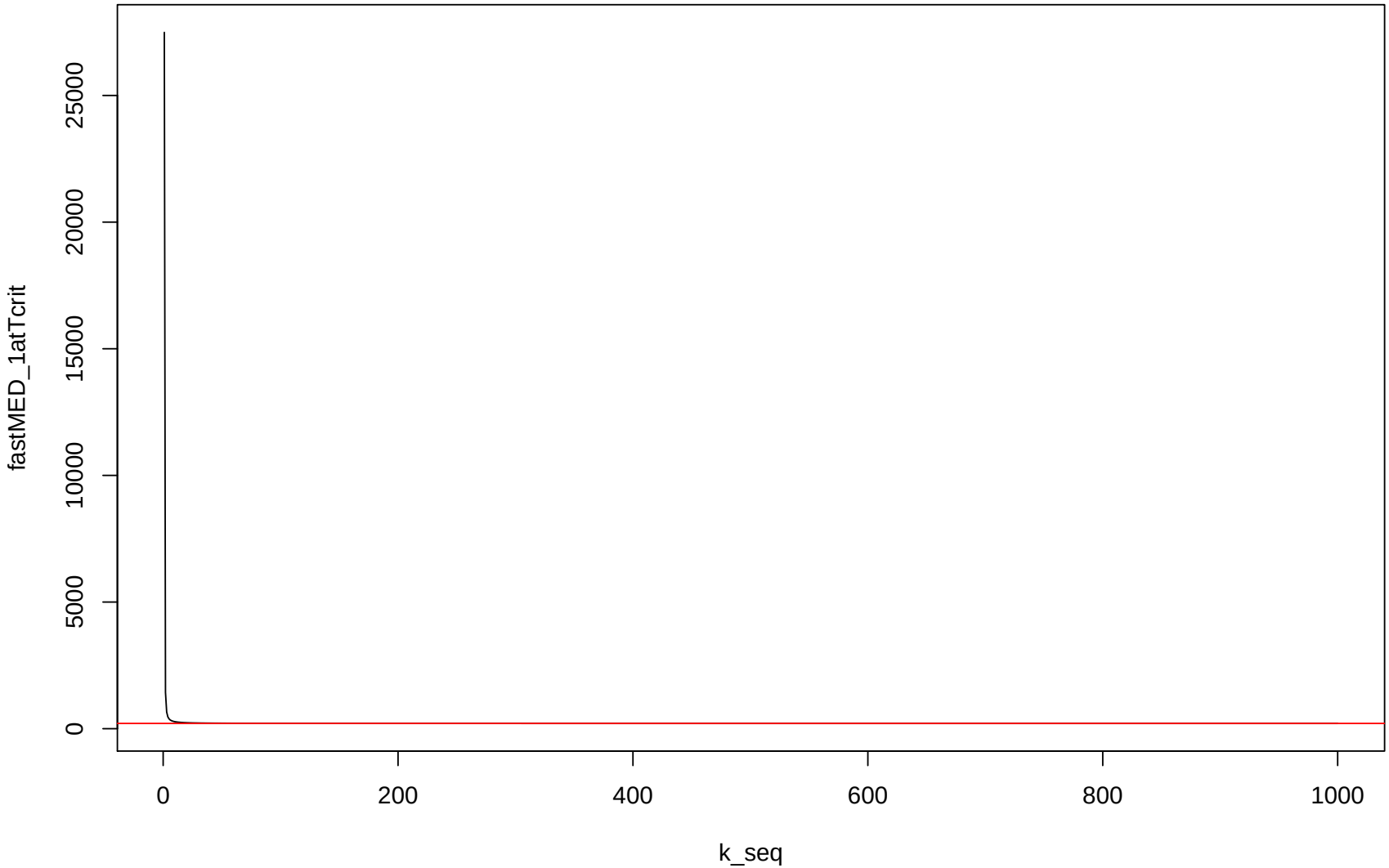




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	27.105	28.693	28.57	28.757	28.749	27.492
Fast	335.26	209.63	208.43	208.1	208.06	208.15
1atT(k=4)	502.21	484.28	480.28	480.12	479.88	469.12
Mean(D)	0.59672	0.55135	0.55316	0.55152	0.55167	0.5767
sd(D)	0.28173	0.25876	0.25893	0.25844	0.25845	0.26824

Fast MED Evaluated at One-at-a-Time Criterion

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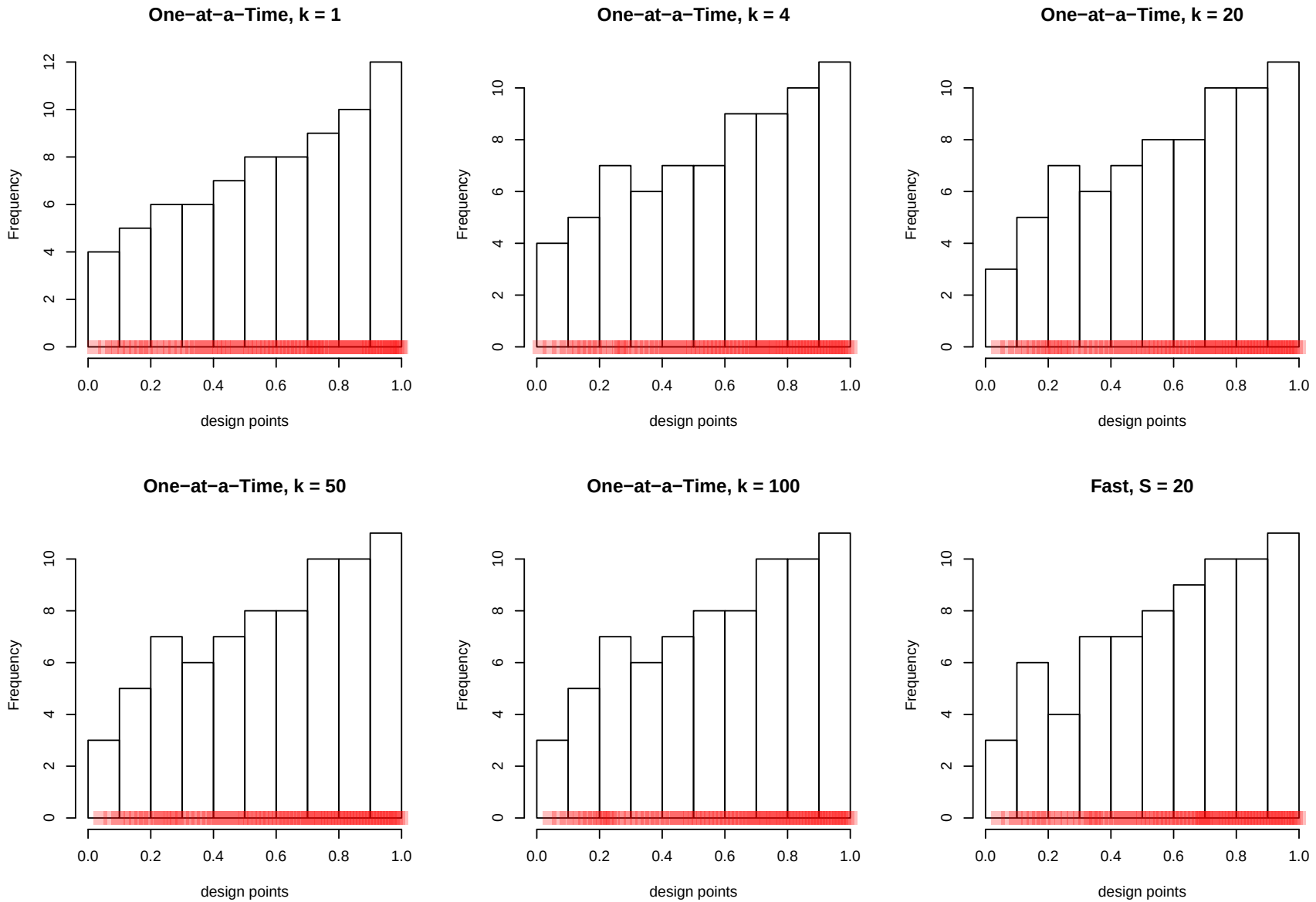
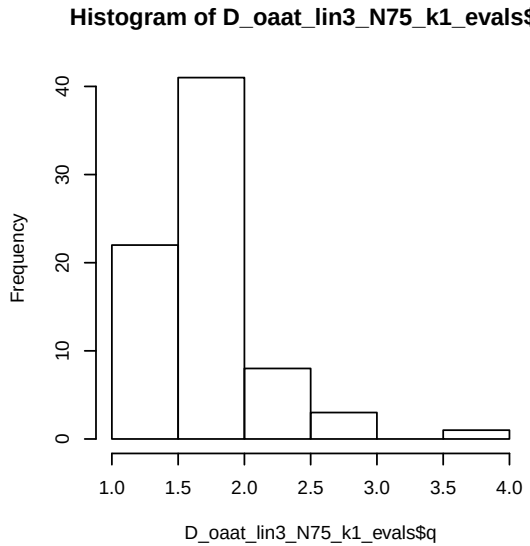
## [1] "Fast Criterion :  208.149982615237"

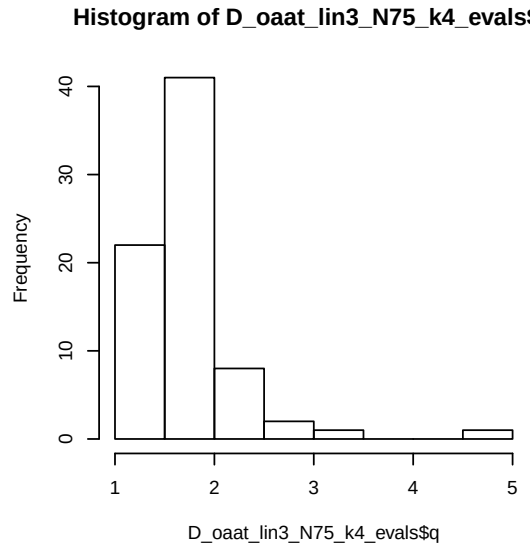
## [1] "One-at-a-Time Criterion at max k :  208.175089060583"
```

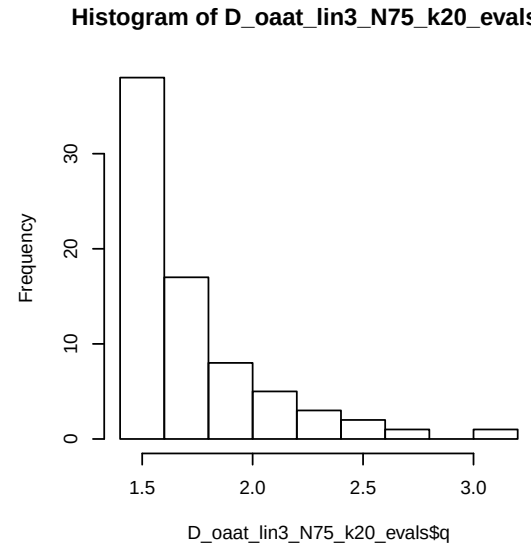
Designs, N = 75

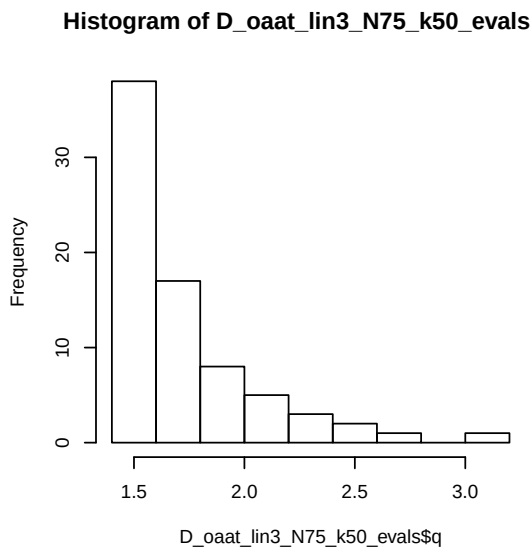

One−at−a−Time, k = 1
One−at−a−Time, k = 4
One−at−a−Time, k = 20
One−at−a−Time, k = 50
One−at−a−Time, k = 100
Fast, S = 20
Frequency
design points
0.0
0.2
0.4
0.6
0.8
1.0

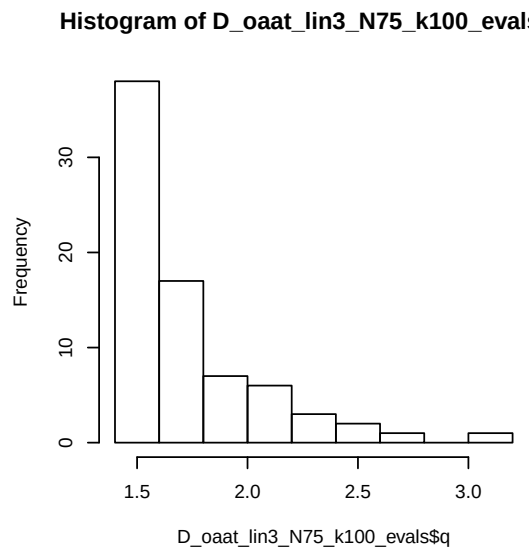
Evaluations of q(.)

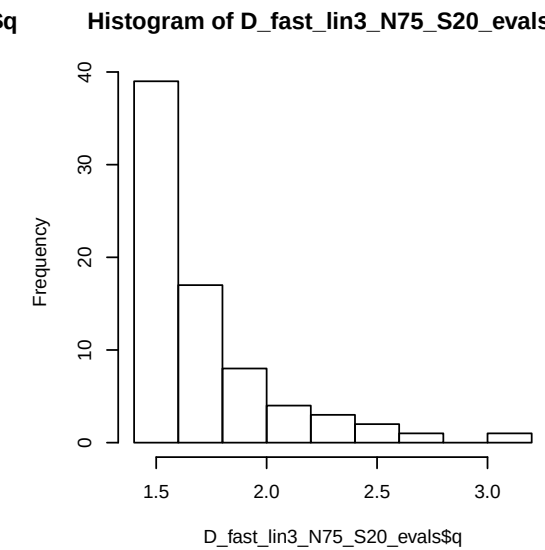




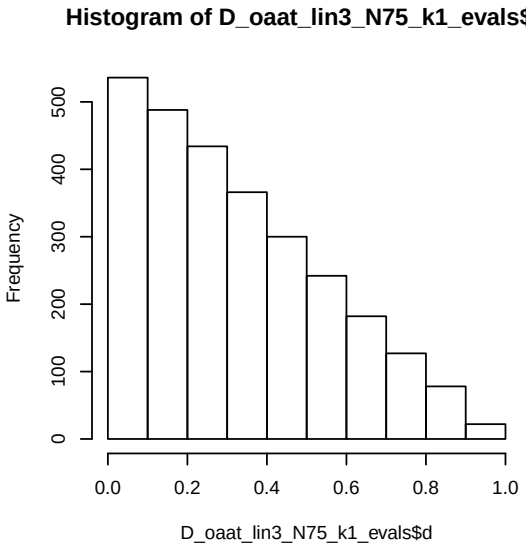


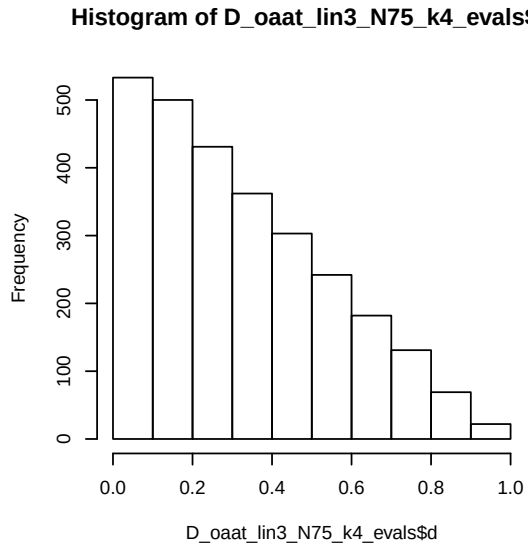


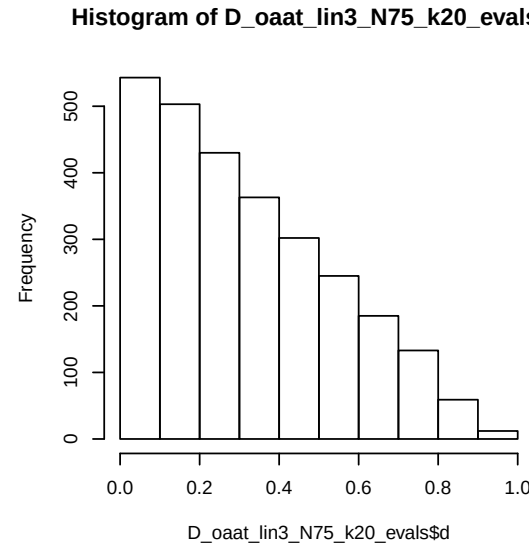


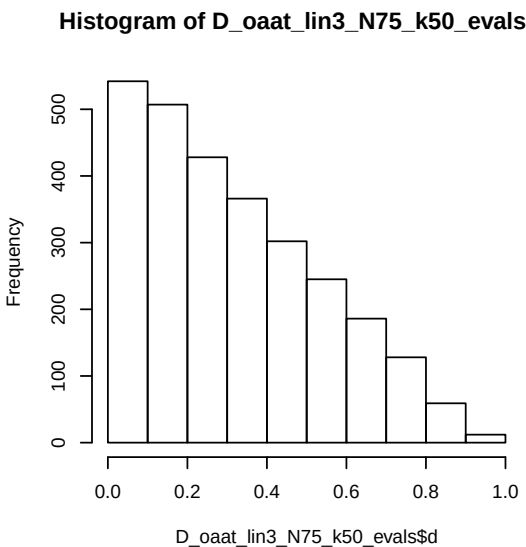


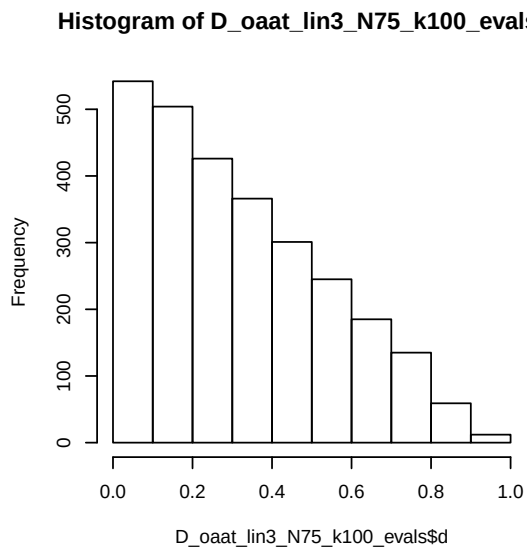
Pairwise distances of design points

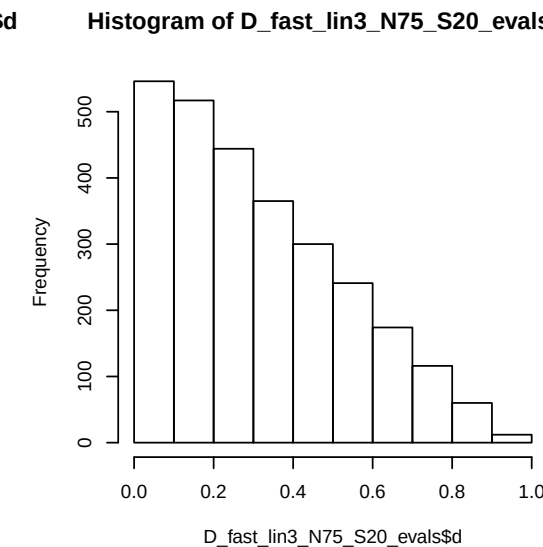




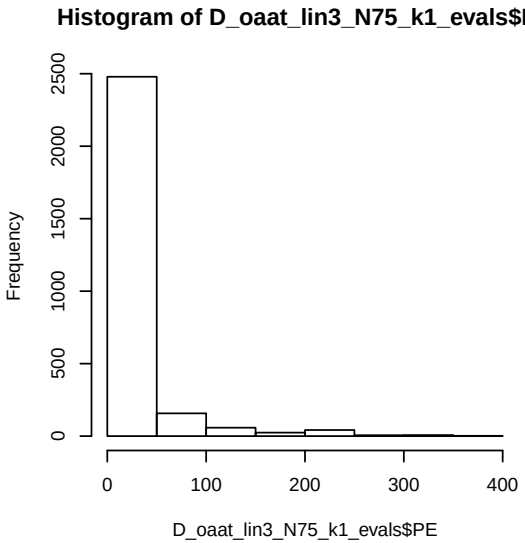


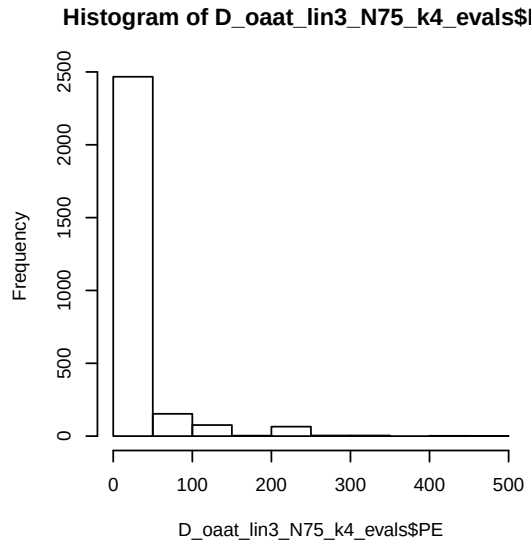


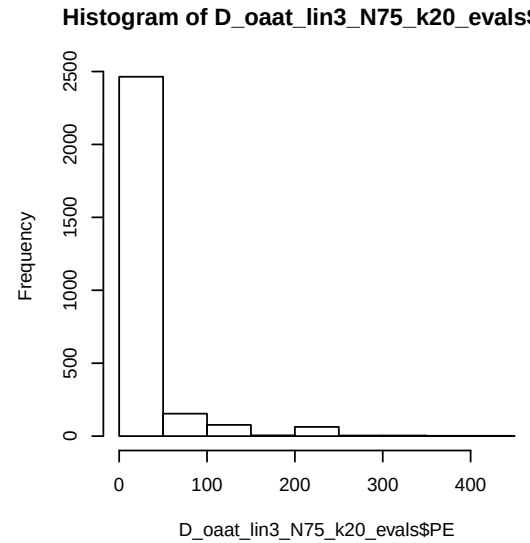


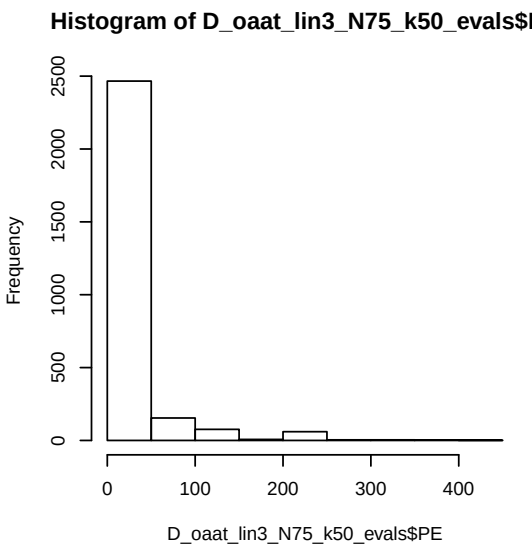


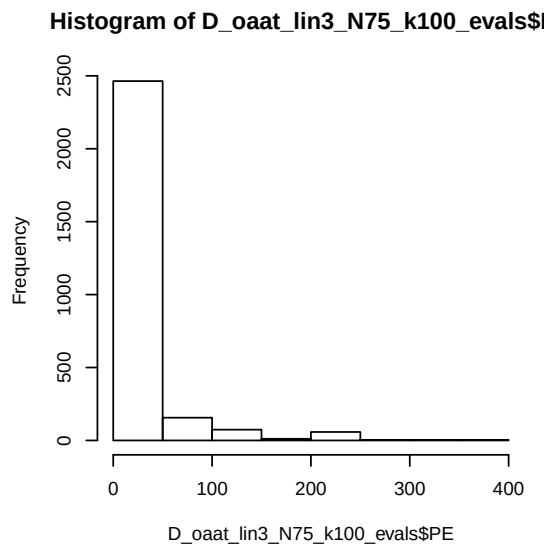
Pairwise potential energies of design points

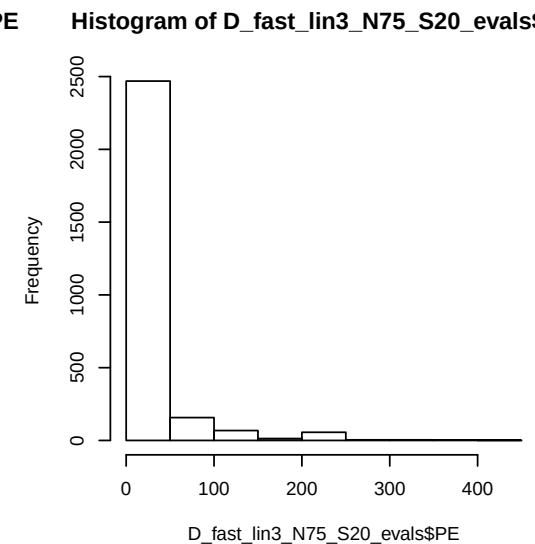








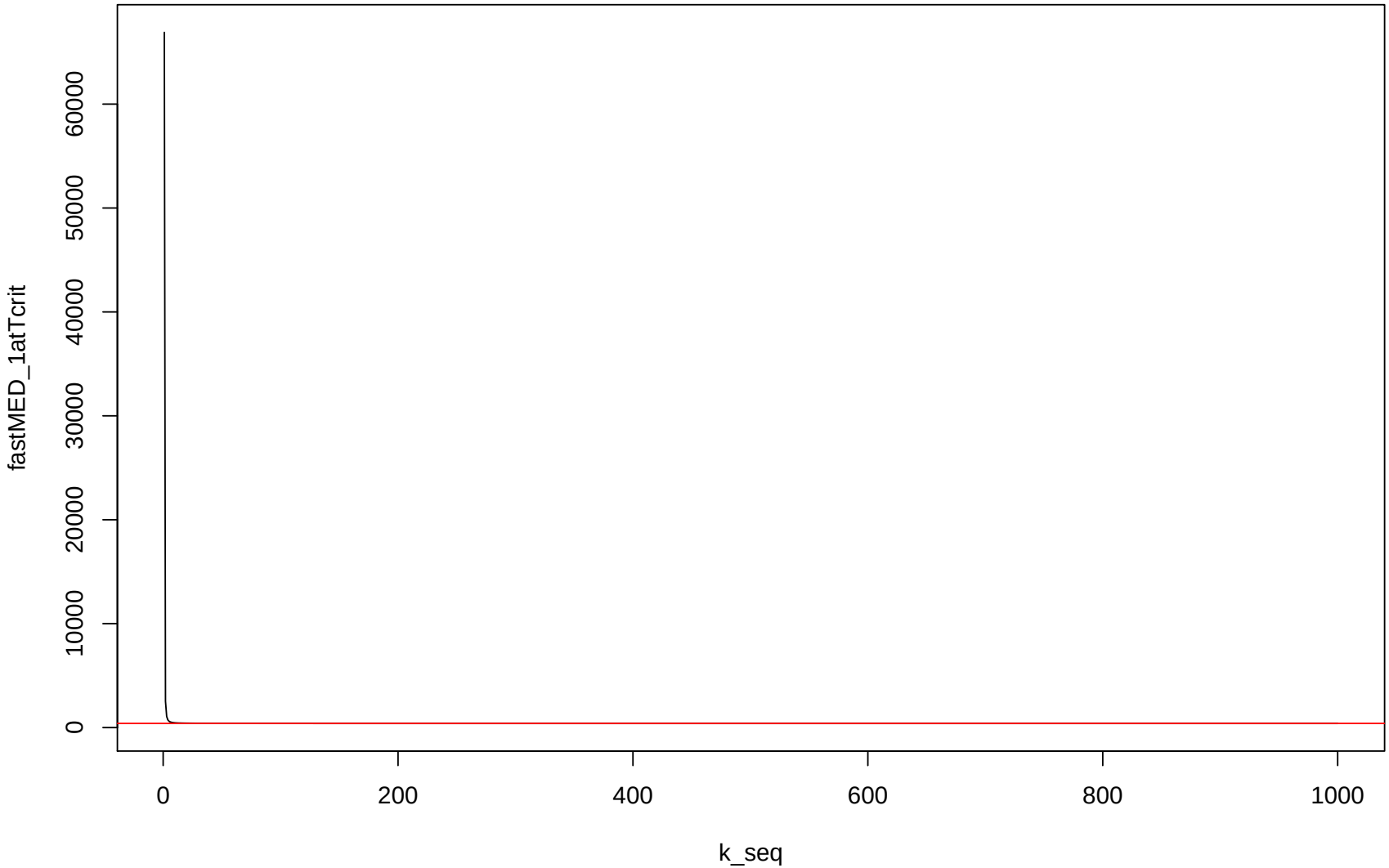




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	66.27	66.737	66.912	66.844	67.018	66.905
Fast	373.54	451.94	402	400.01	399.65	401.03
1atT(k=4)	733.35	742.62	745.74	745.07	745.91	744.47
Mean(D)	0.5874	0.58103	0.58511	0.58596	0.58528	0.59326
sd(D)	0.28154	0.28039	0.27604	0.27536	0.2764	0.27154

Fast MED Evaluated at One-at-a-Time Criterion




```
## [1] "Fast Criterion :  401.030941543323"

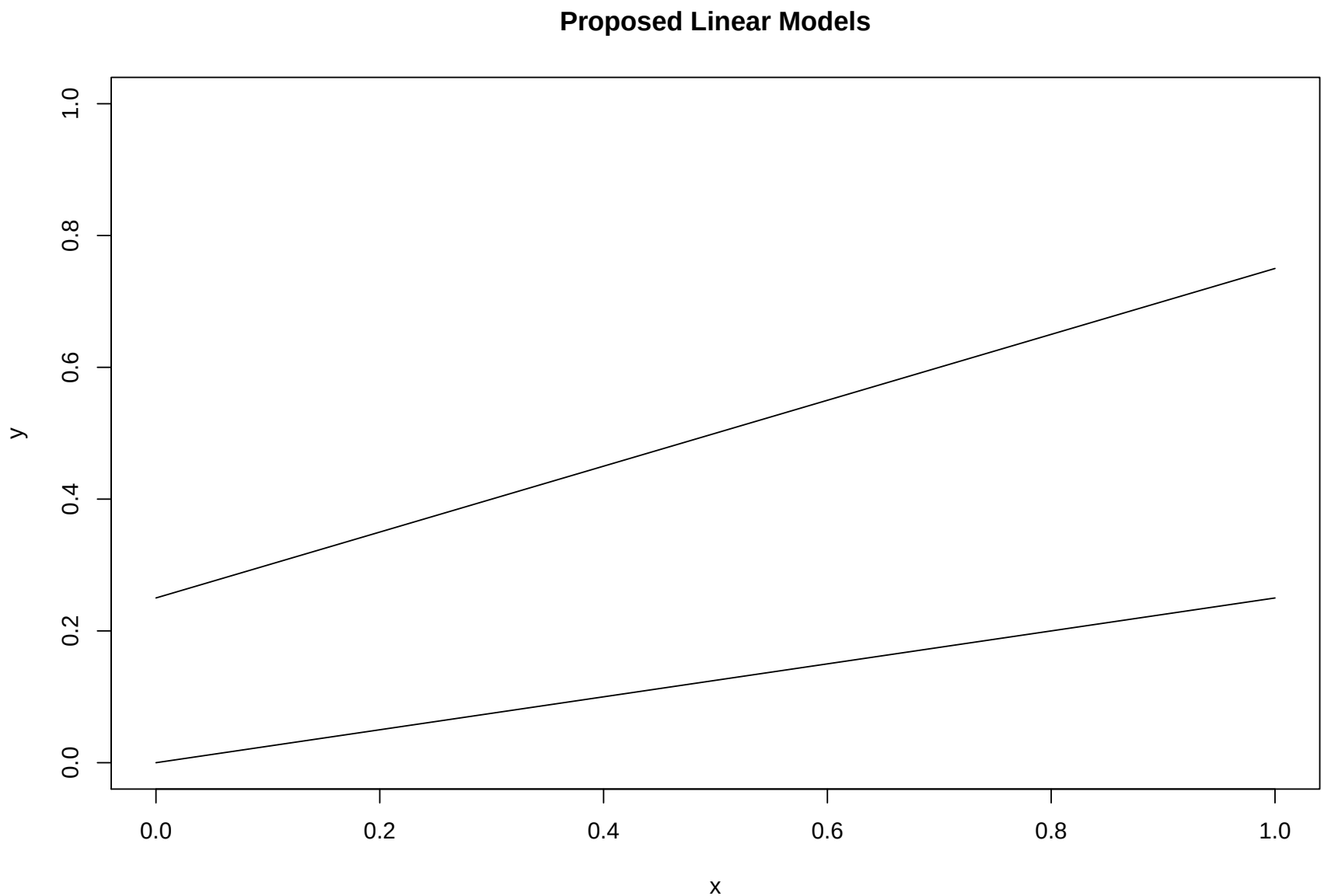
## [1] "One-at-a-Time Criterion at max k :  401.030941880717"
```

Comparing I and III

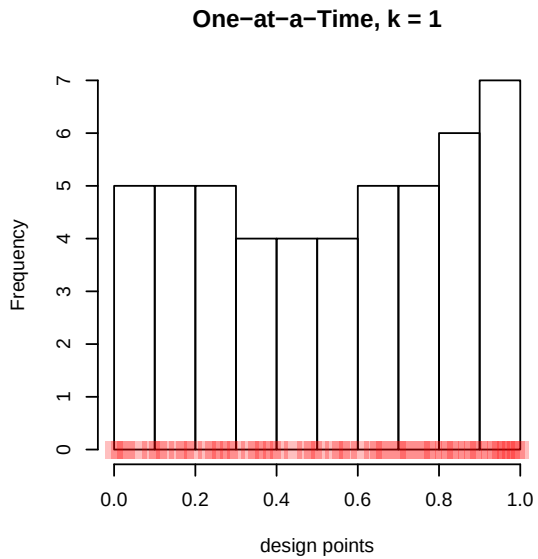
- The designs are exactly the same, whether the intercept is at 0, or at 0.5 (or anywhere else)!
- All that matters for MED is how much distance there is between the two functions $f_1(x)$ and $f_2(x)$, at a given point x.

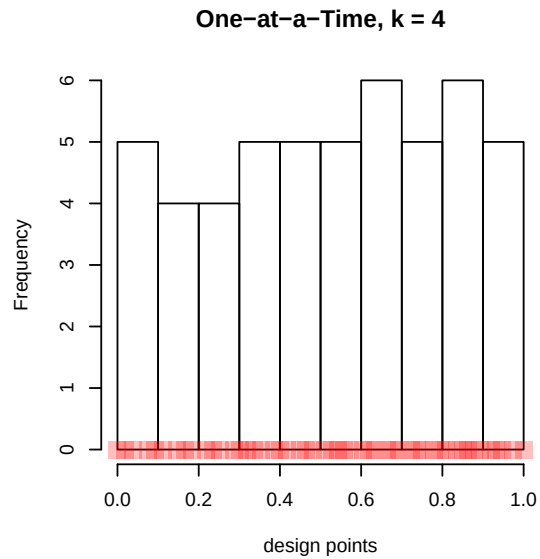
II. space in-between

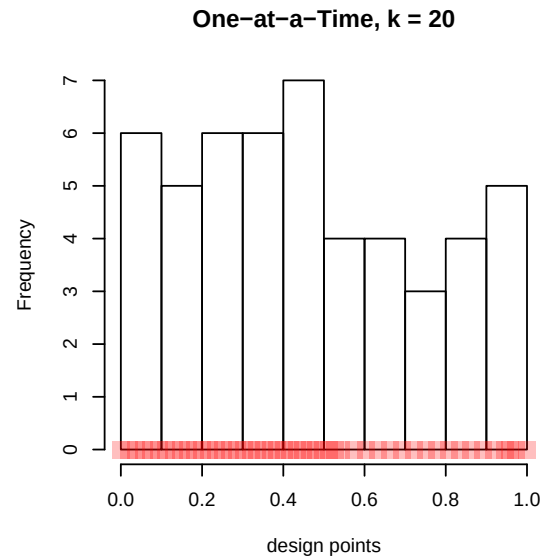
II. Proposed Linear Models

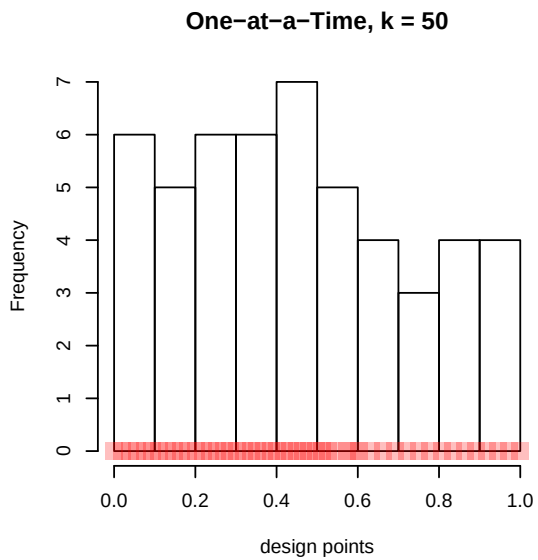


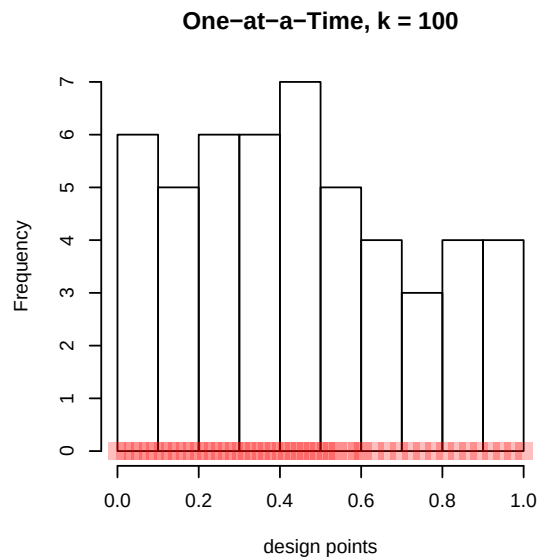
Designs, N = 50

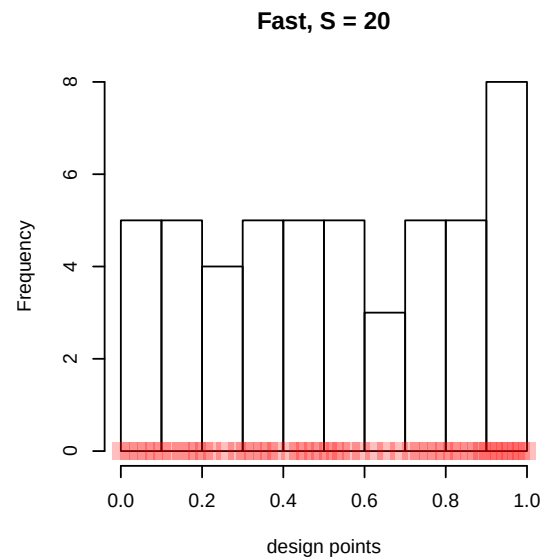

One−at−a−Time, k = 1
Frequency
design points


One−at−a−Time, k = 4
Frequency
design points

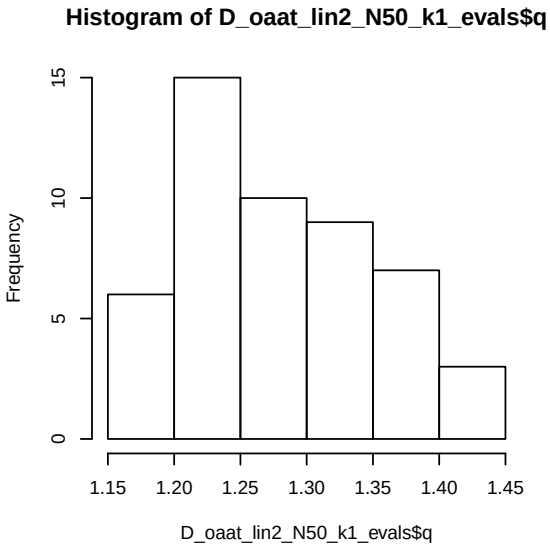

One−at−a−Time, k = 20
Frequency
design points

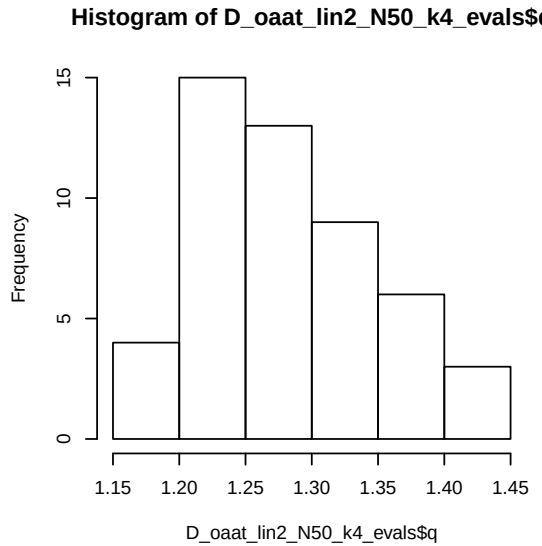

One−at−a−Time, k = 50
Frequency
design points

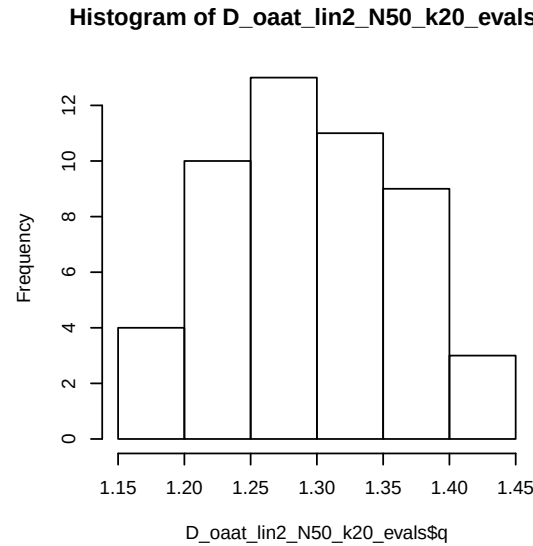

One−at−a−Time, k = 100
Frequency
design points

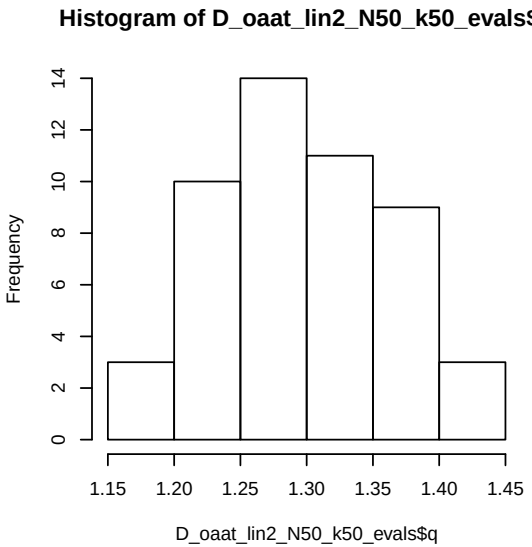

Fast, S = 20
Frequency
design points

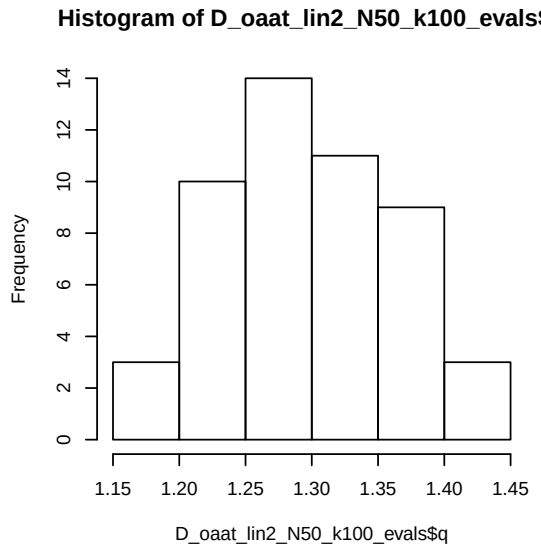
Evaluations of q(.)

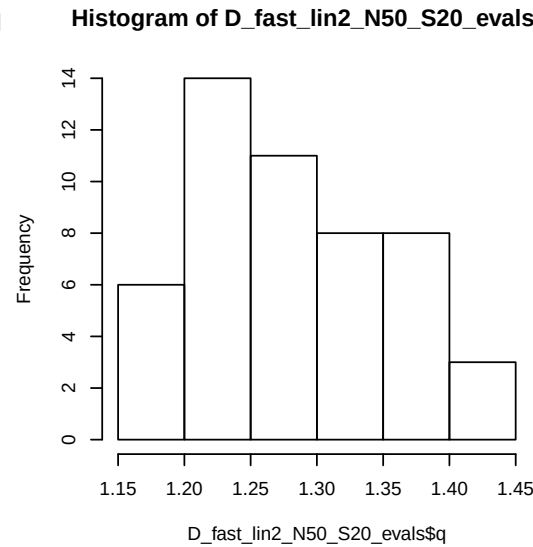




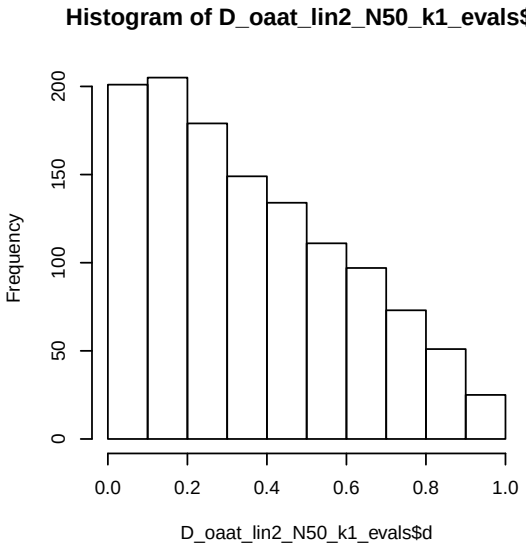


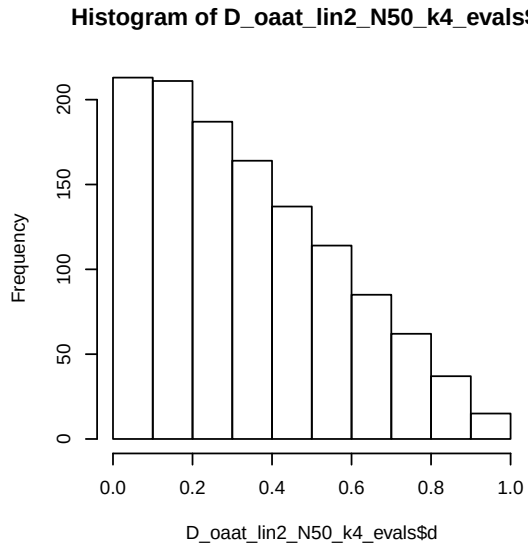


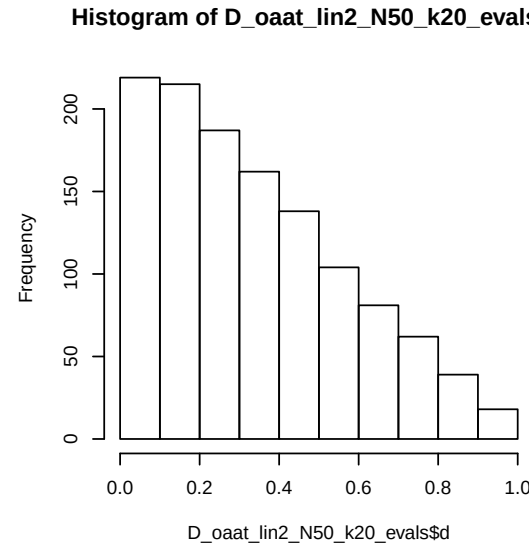


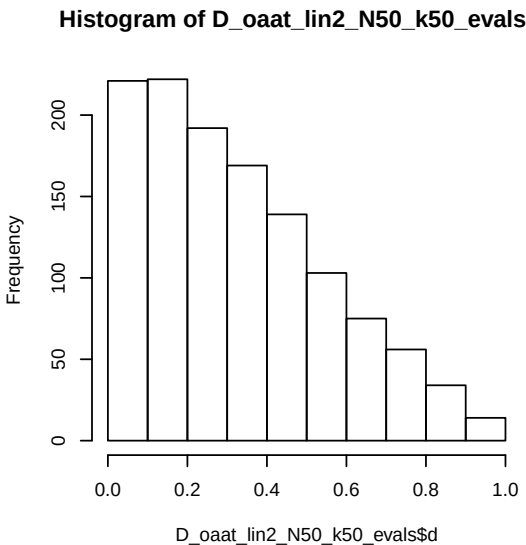


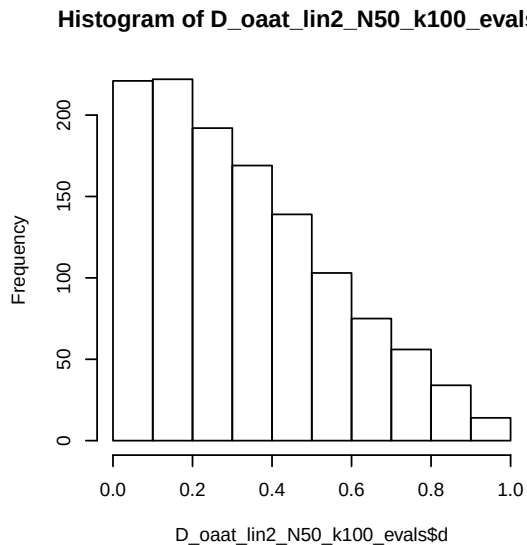
Pairwise distances of design points

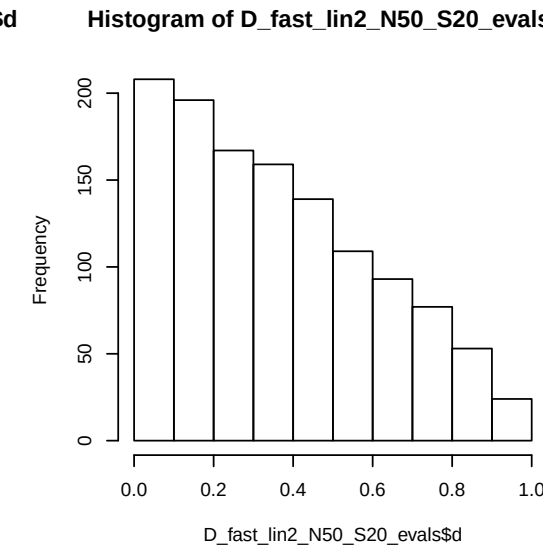




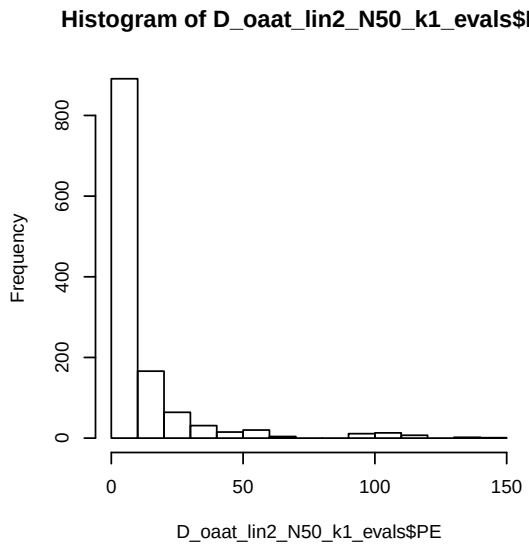


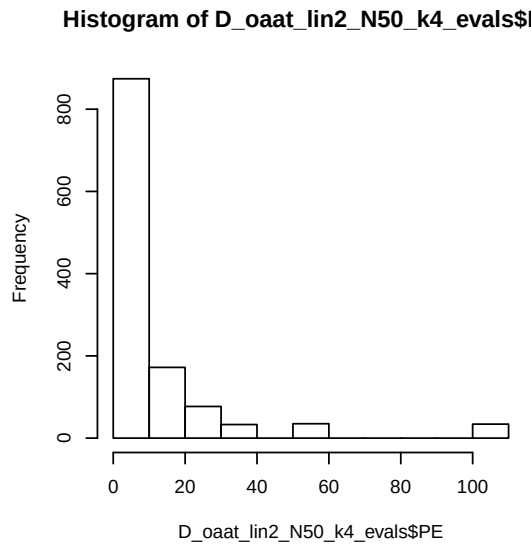


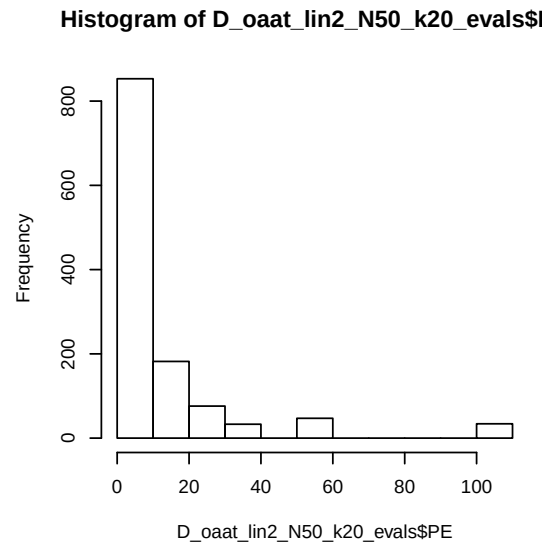


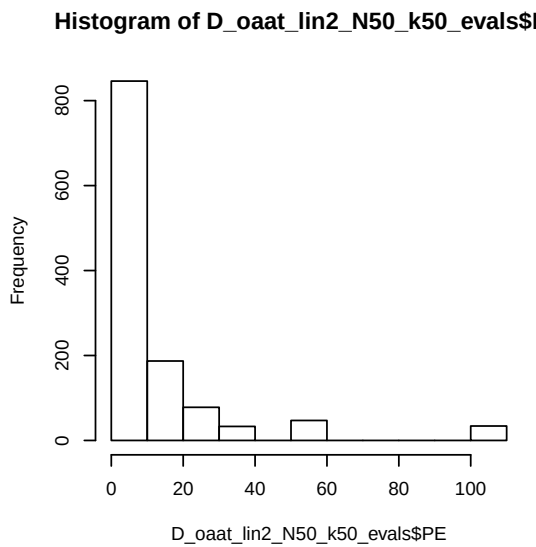


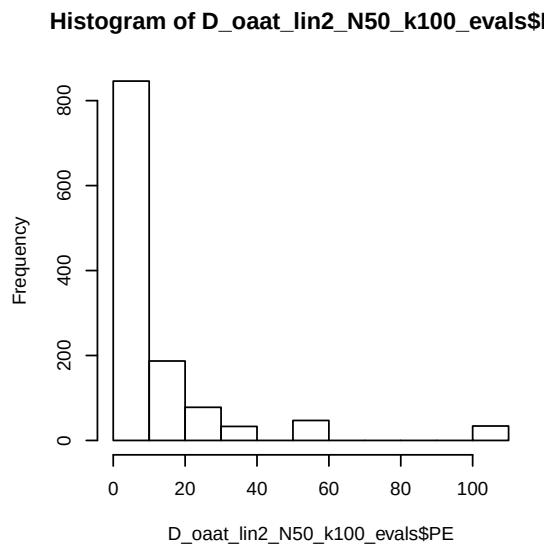
Pairwise potential energies of design points

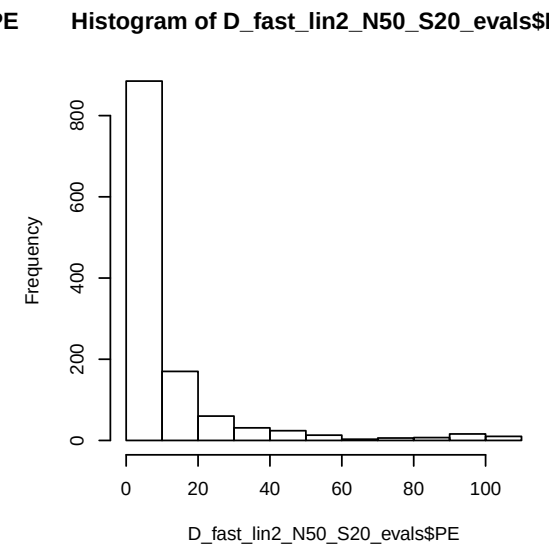








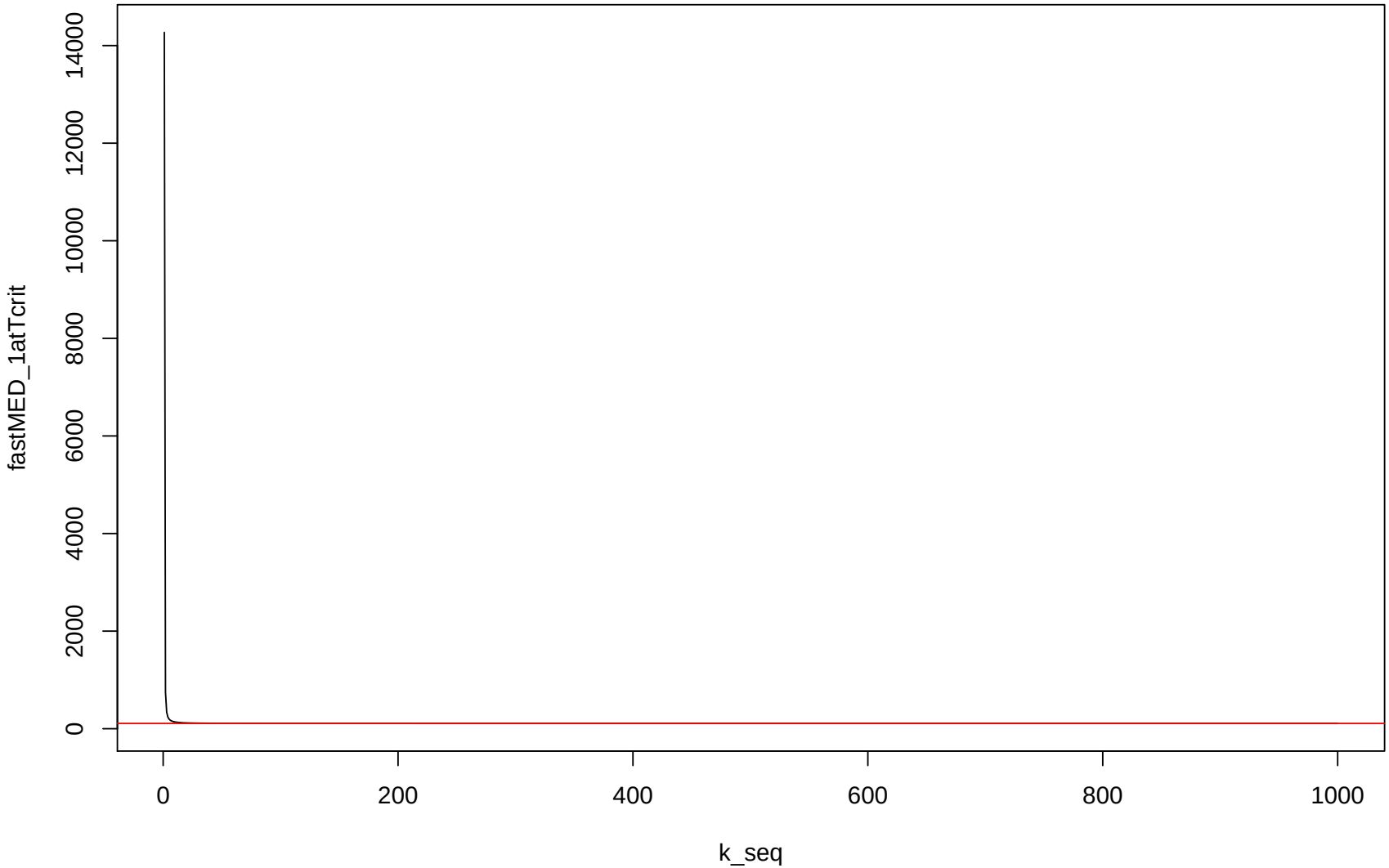




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	14.448	14.712	15.394	15.558	15.558	14.271
Fast	144.42	105.58	105.23	105.32	105.32	108.16
1atT(k=4)	266.3	258.43	259.47	259.44	259.44	240.49
Mean(D)	0.53194	0.5202	0.45769	0.45036	0.45036	0.52515
sd(D)	0.3106	0.2927	0.29233	0.28393	0.28393	0.31158

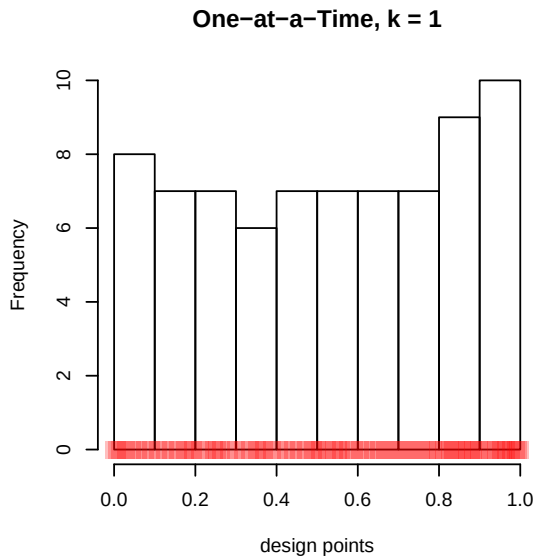
Fast MED Evaluated at One-at-a-Time Criterion

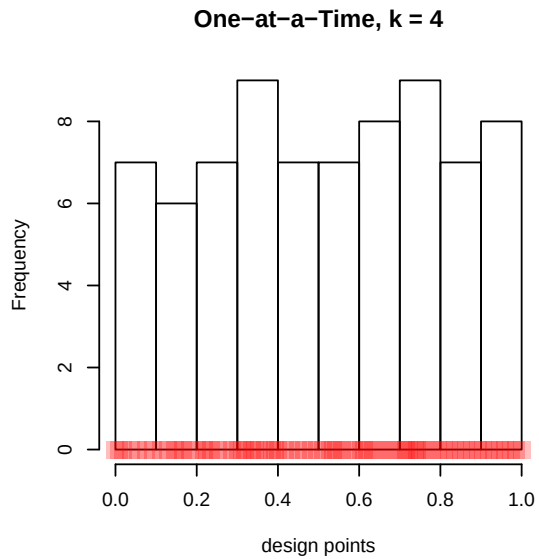


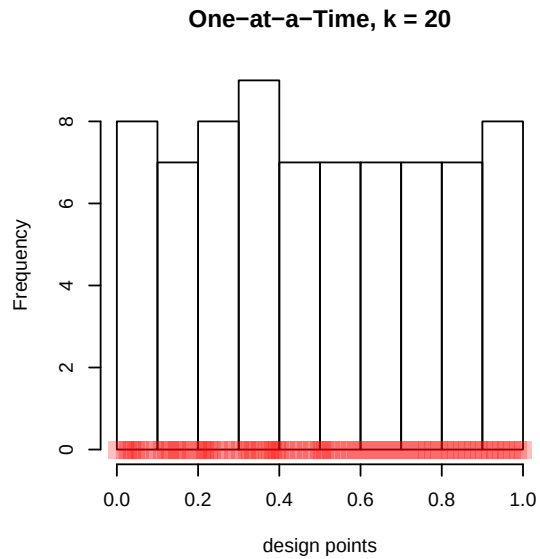

```
## [1] "Fast Criterion :  108.156988894383"

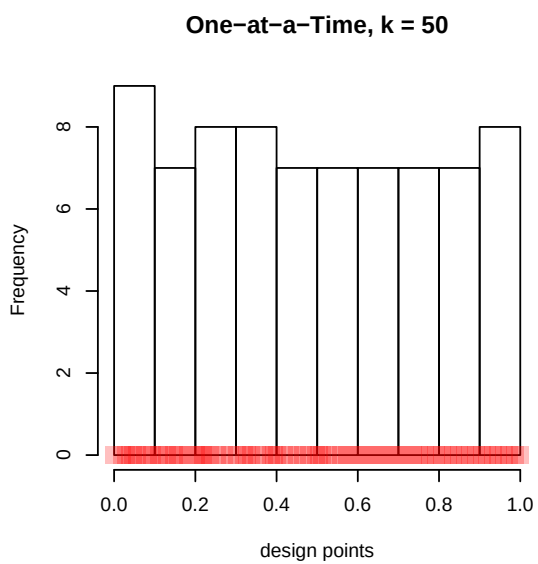
## [1] "One-at-a-Time Criterion at max k :  108.160369698106"
```

Designs, N = 75


One−at−a−Time, k = 1
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 4
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 50
Frequency
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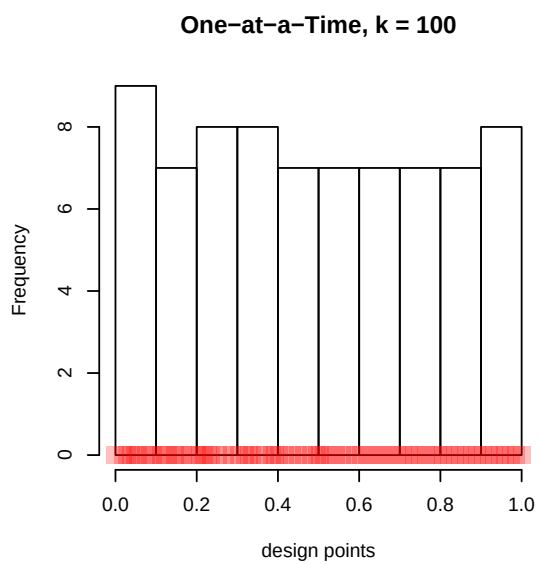
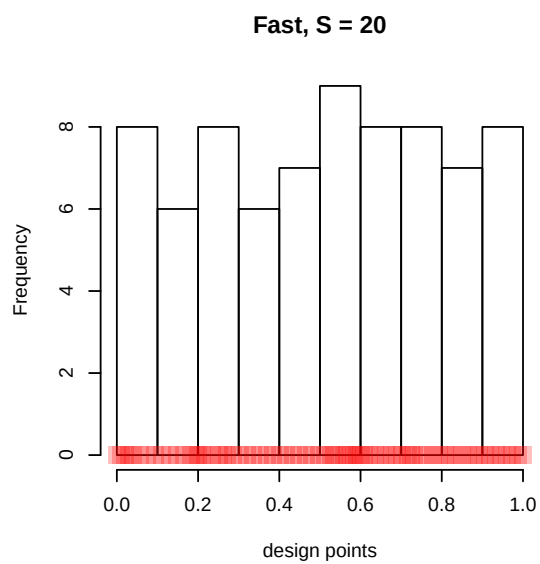
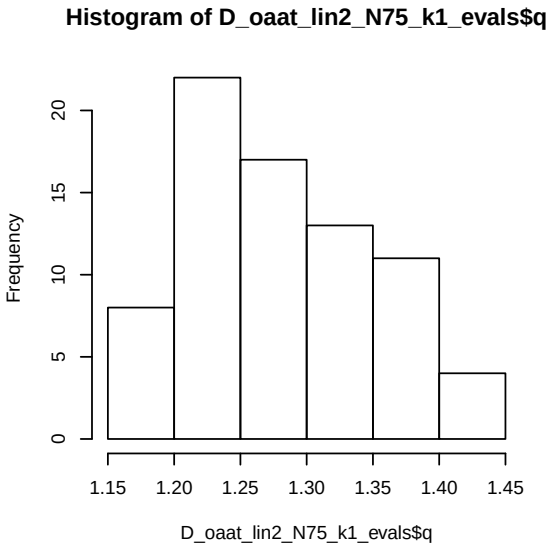
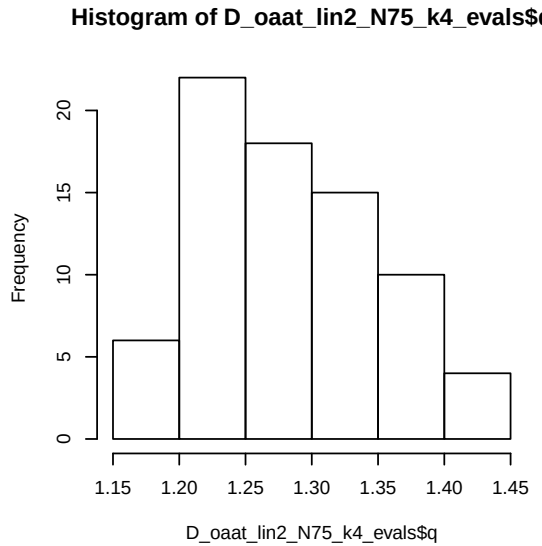
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

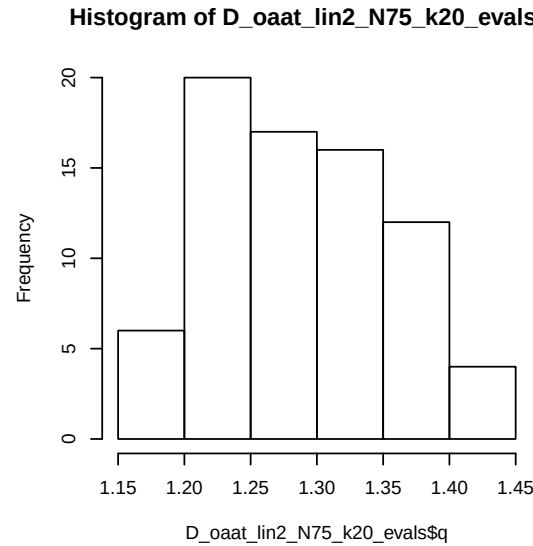

One−at−a−Time, k = 100
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

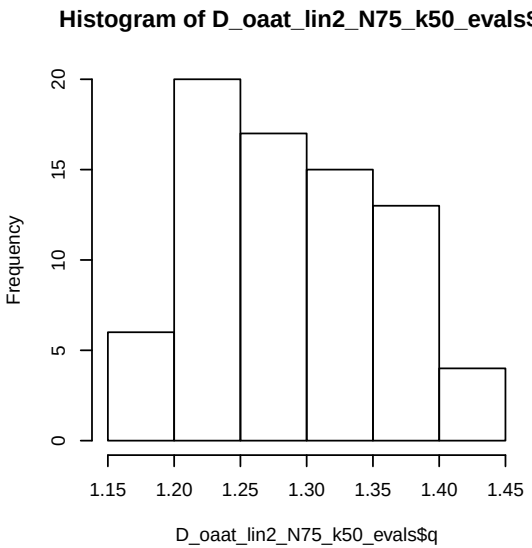

Fast, S = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

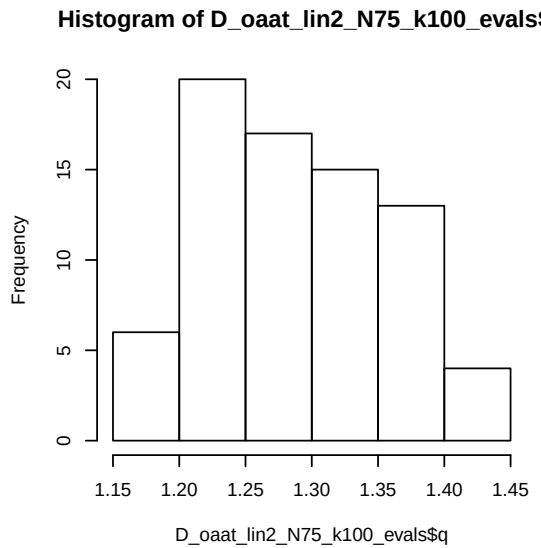
Evaluations of q(.)

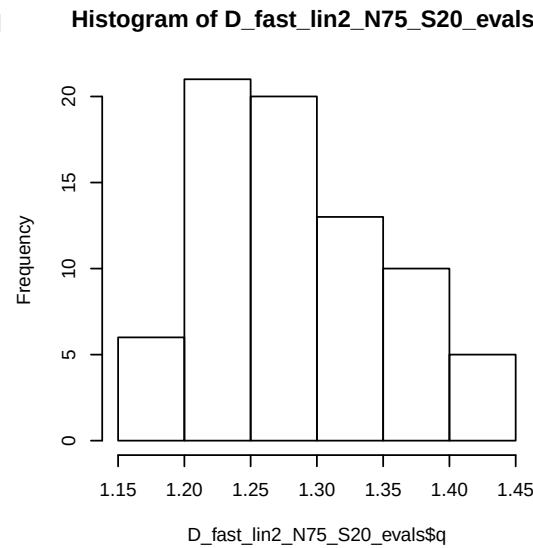




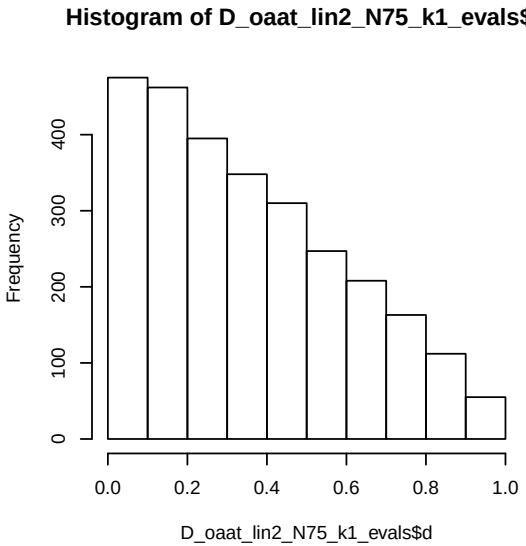


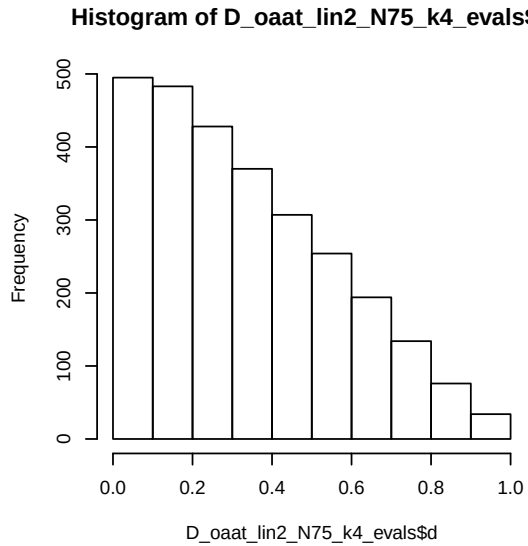


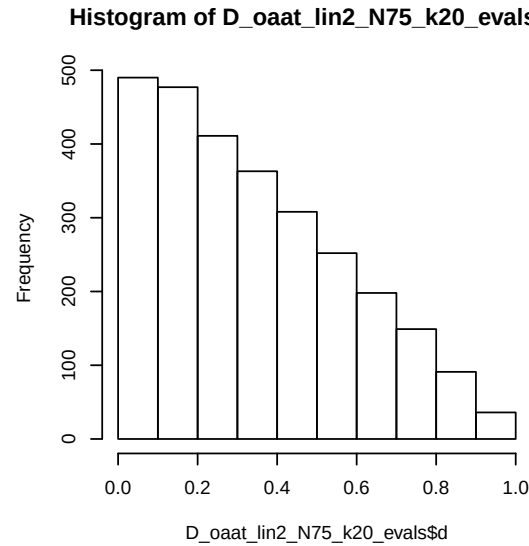


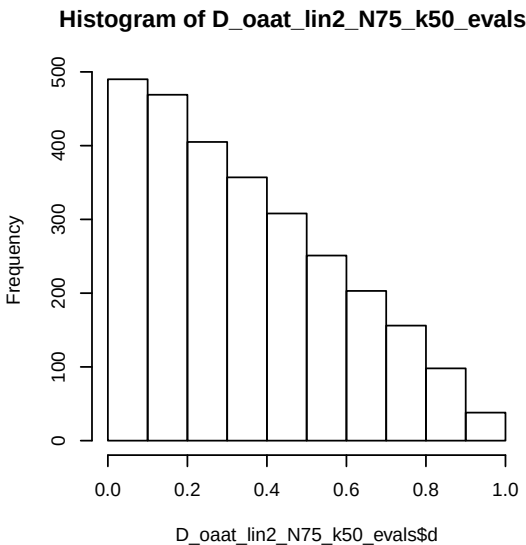


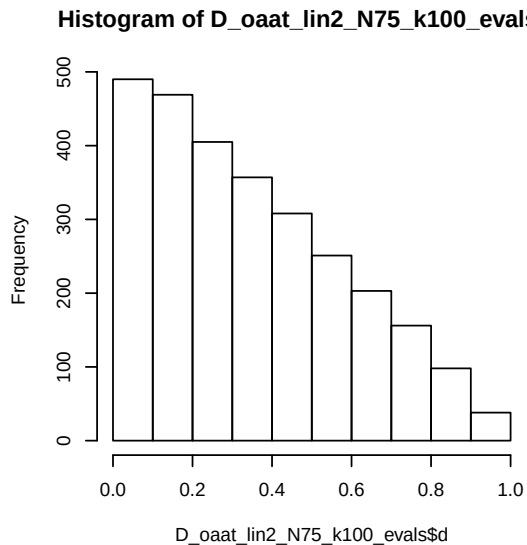
Pairwise distances of design points

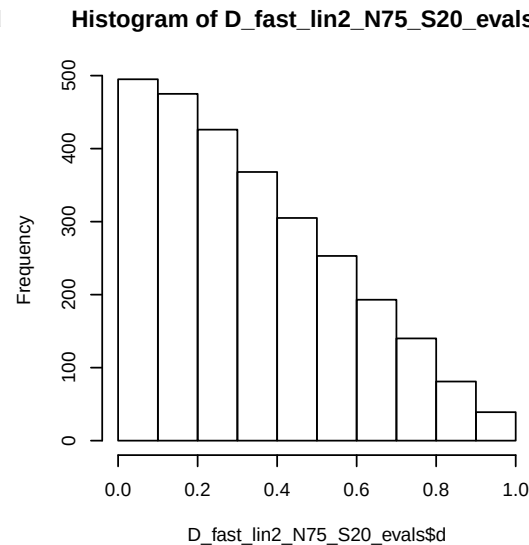




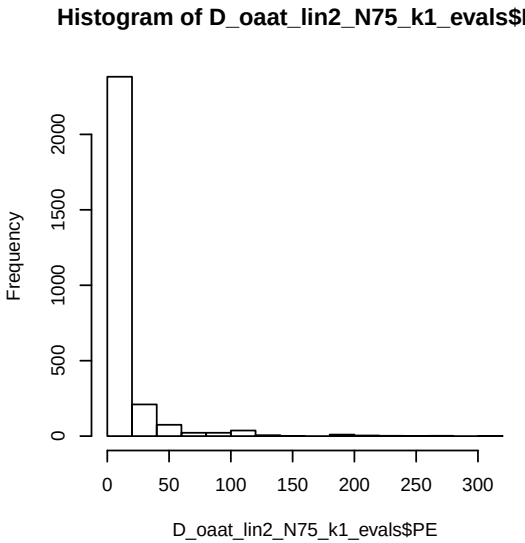


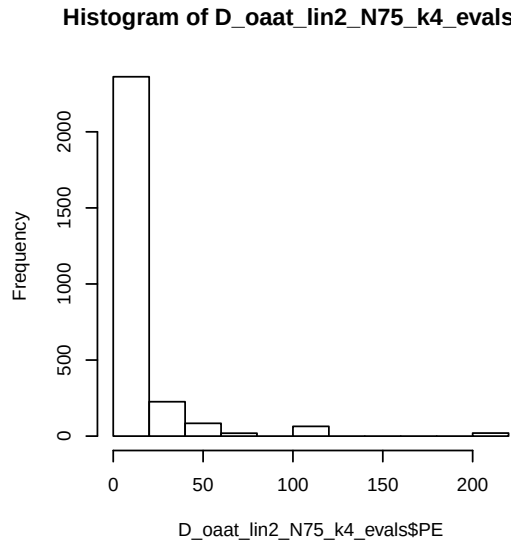


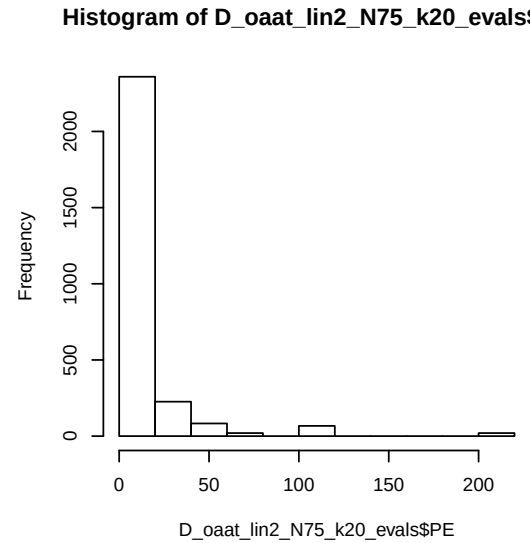


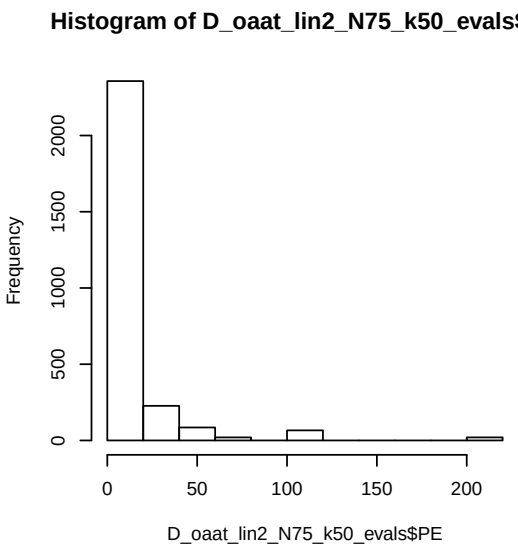


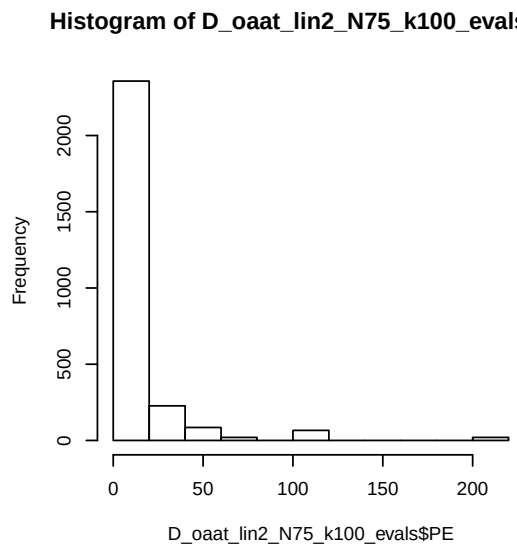
Pairwise potential energies of design points

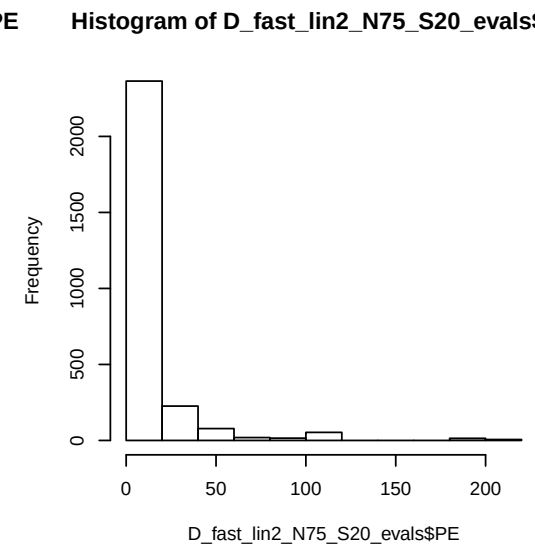








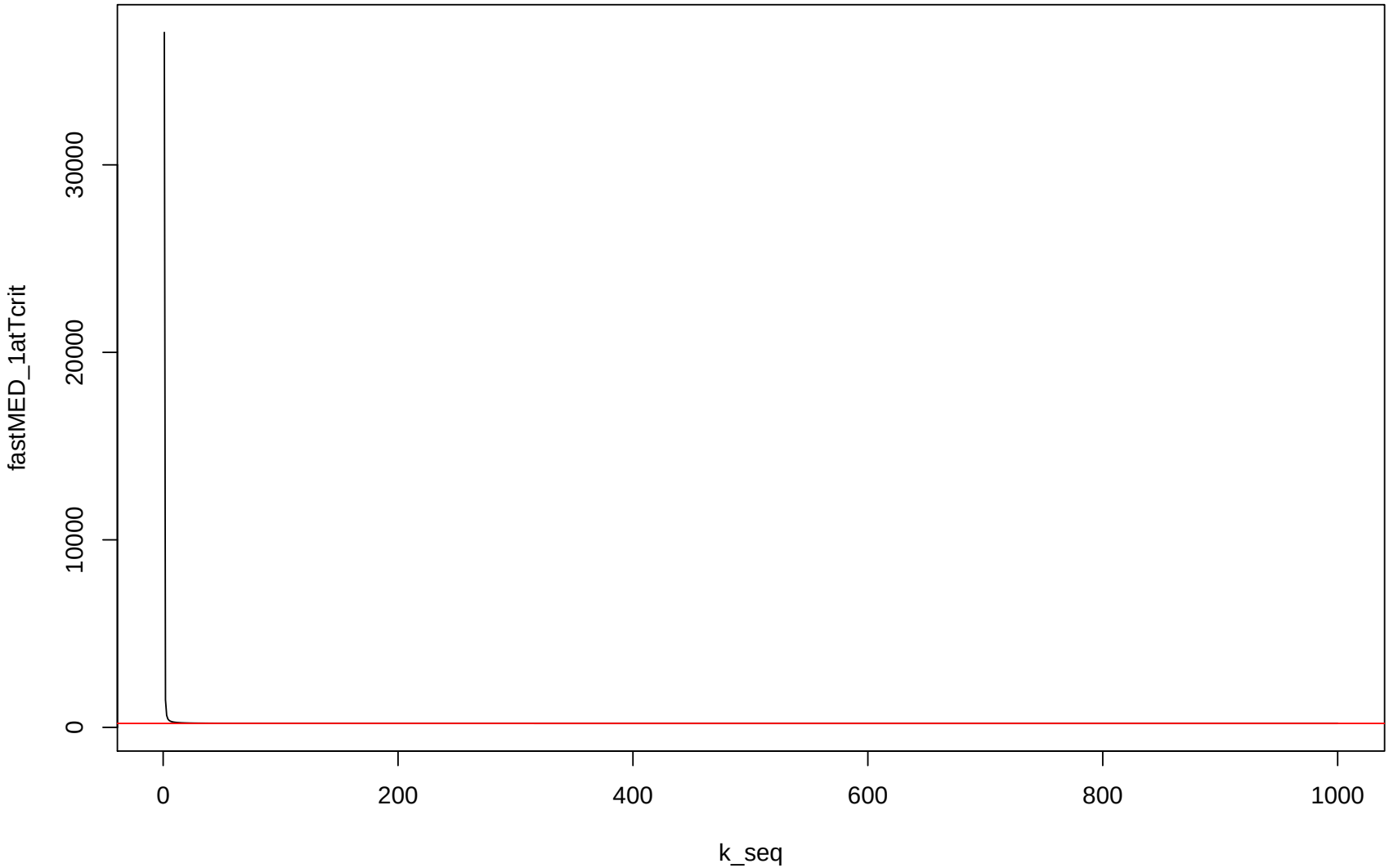




Comparing Evaluations for each N = 75 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	36.335	37.069	37.248	37.135	37.135	37.067
Fast	302.5	210.13	210.08	209.66	209.66	209.51
1atT(k=4)	492.53	465.92	466.77	466.43	466.43	451.56
Mean(D)	0.52681	0.51185	0.48986	0.48604	0.48604	0.50762
sd(D)	0.30757	0.28924	0.2955	0.29894	0.29894	0.2923

Fast MED Evaluated at One-at-a-Time Criterion

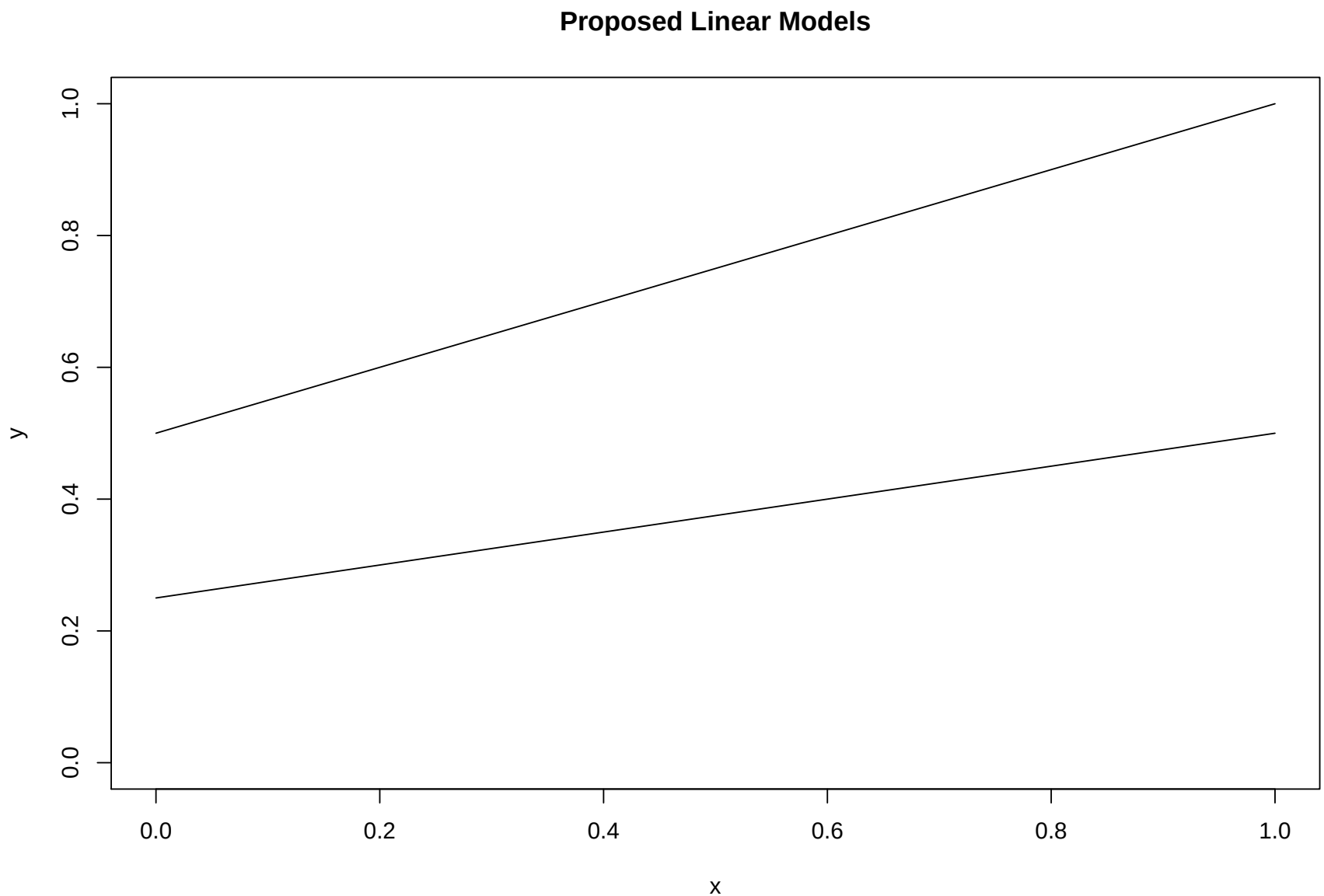



```
## [1] "Fast Criterion :  209.513428140087"

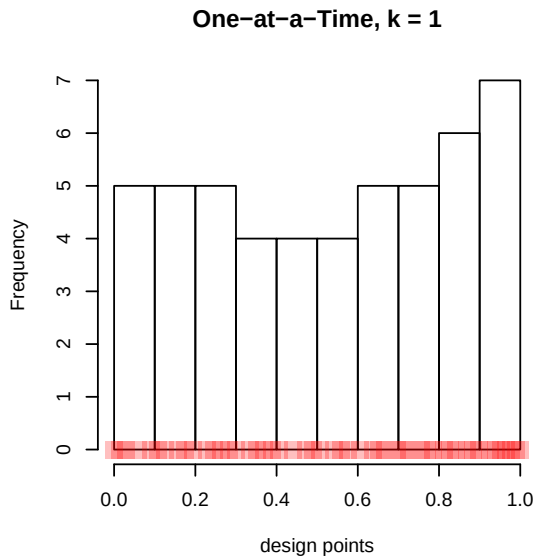
## [1] "One-at-a-Time Criterion at max k :  209.545525843194"
```

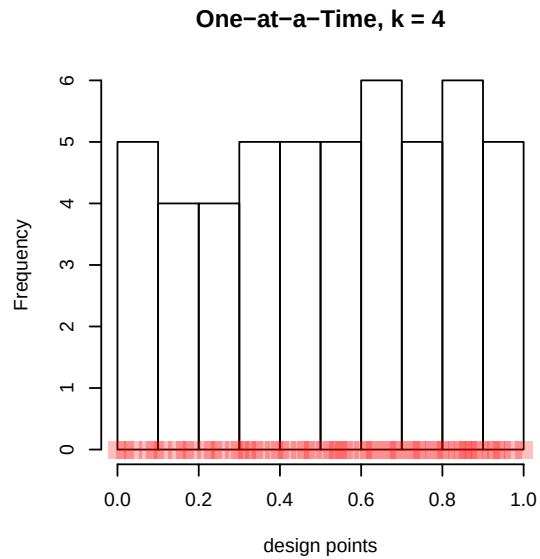
IV. intercept at 0.5 with space in-between

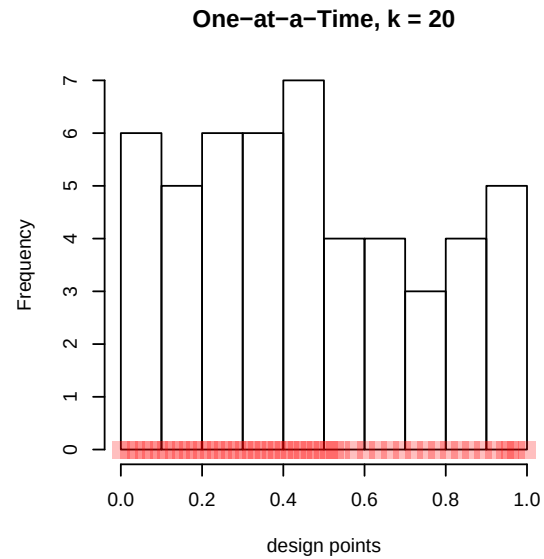
IV. Proposed Linear Models

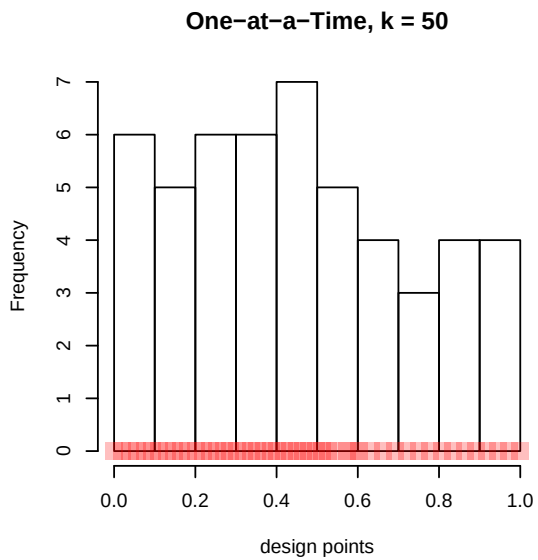


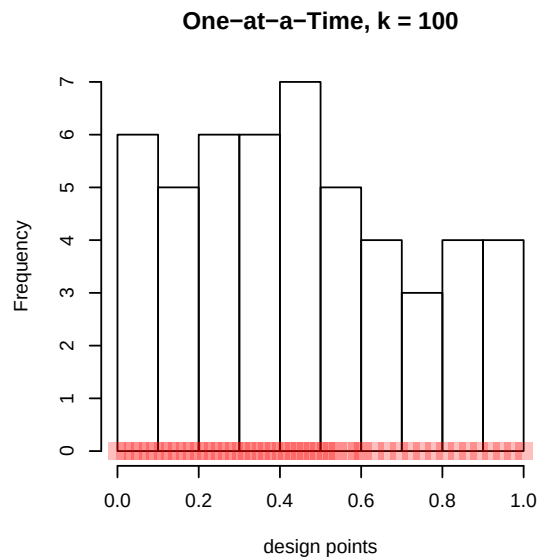
Designs, N = 50

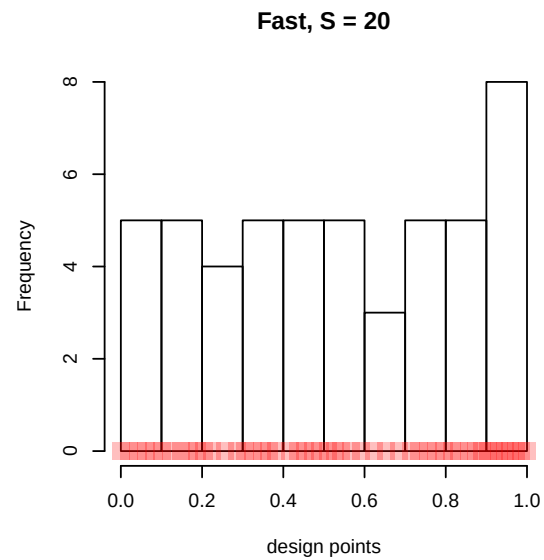

One−at−a−Time, k = 1
Frequency
design points


One−at−a−Time, k = 4
Frequency
design points

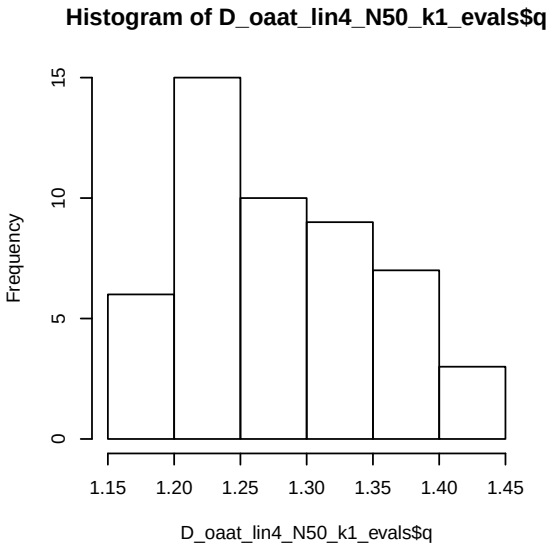

One−at−a−Time, k = 20
Frequency
design points

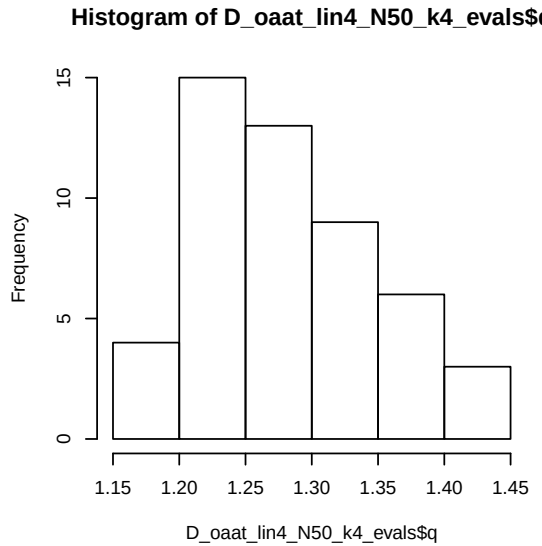

One−at−a−Time, k = 50
Frequency
design points

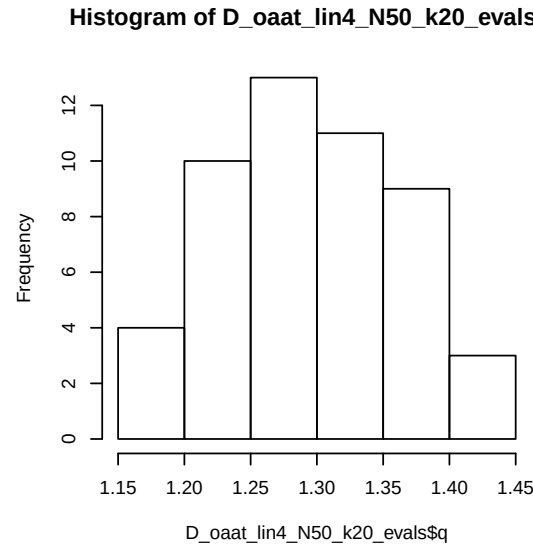

One−at−a−Time, k = 100
Frequency
design points

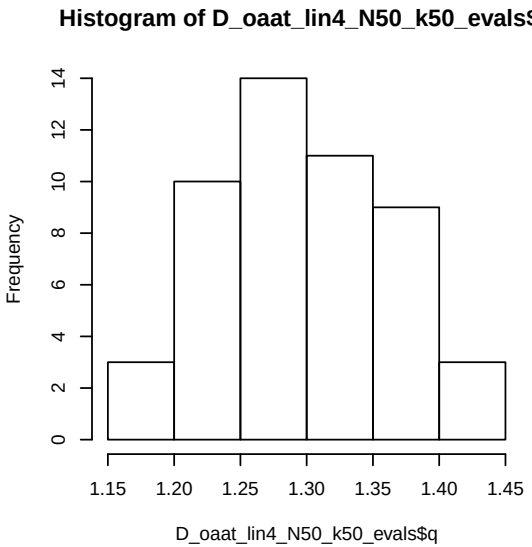

Fast, S = 20
Frequency
design points

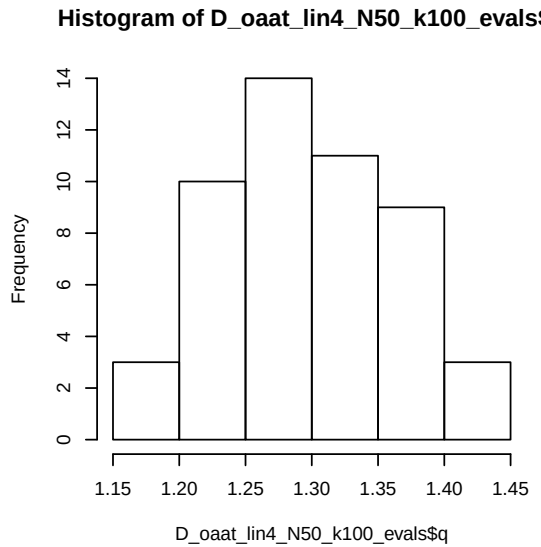
Evaluations of q(.)

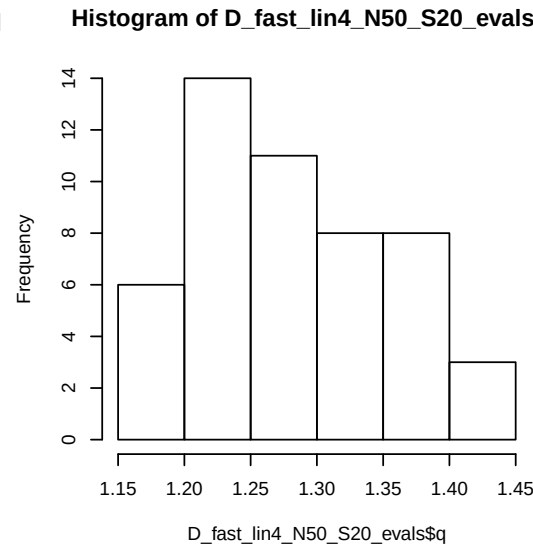




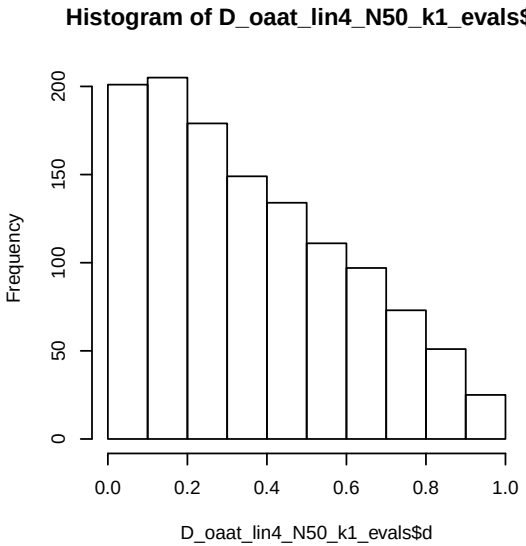


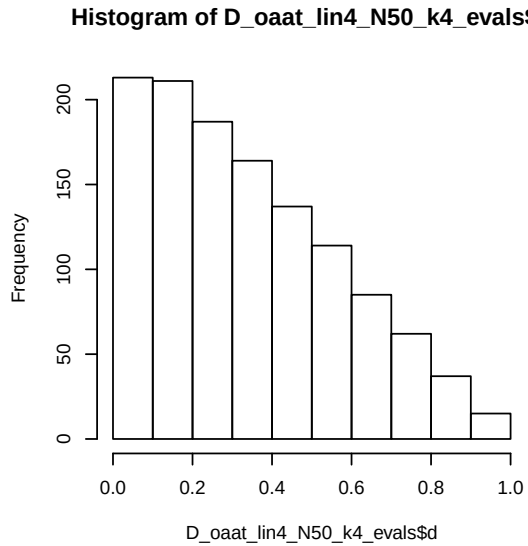


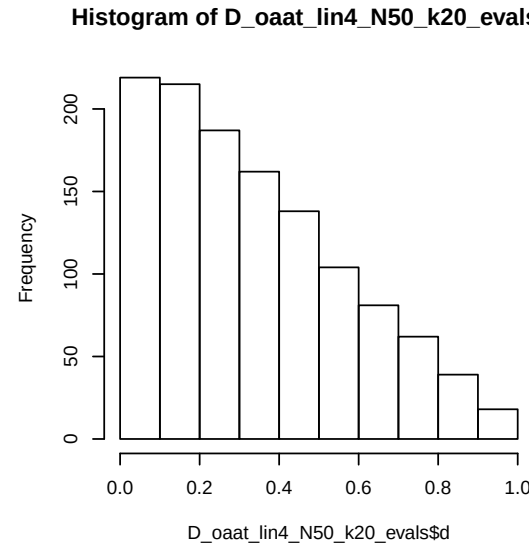


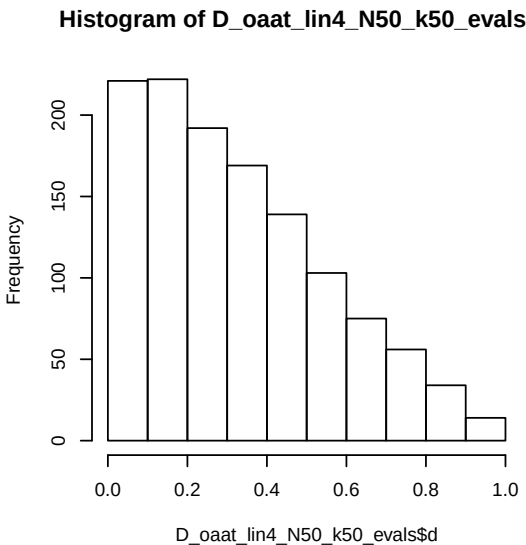


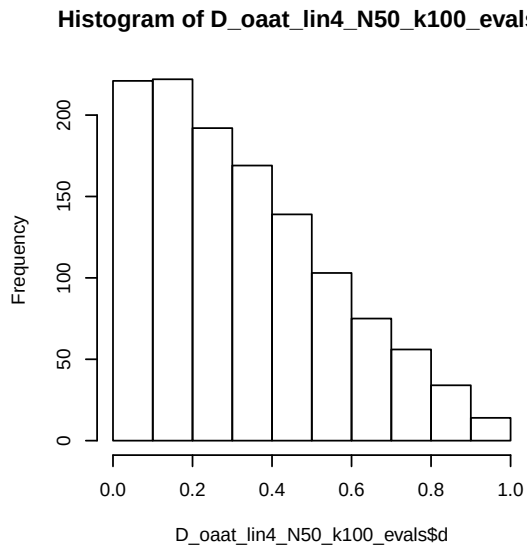
Pairwise distances of design points

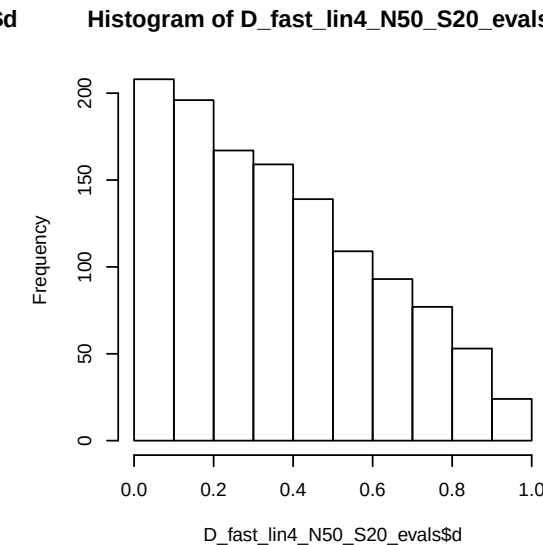




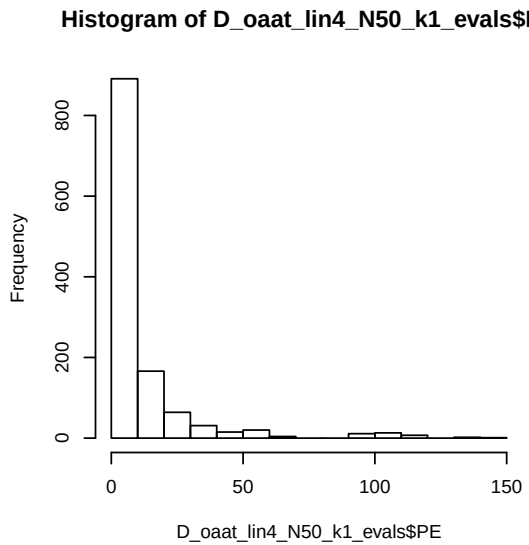


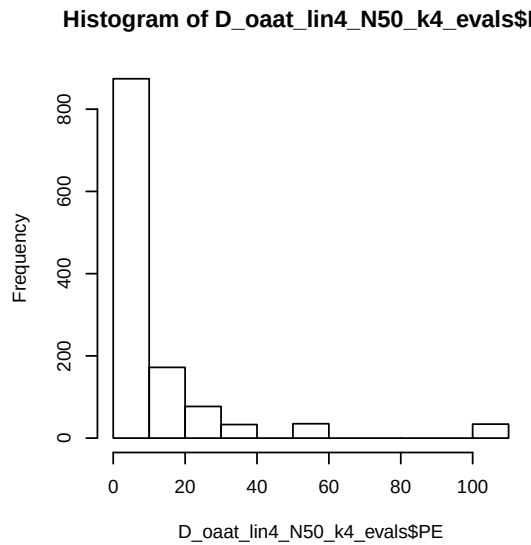


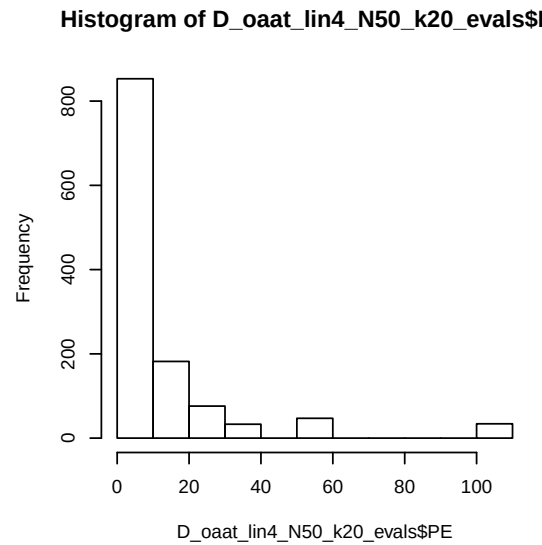


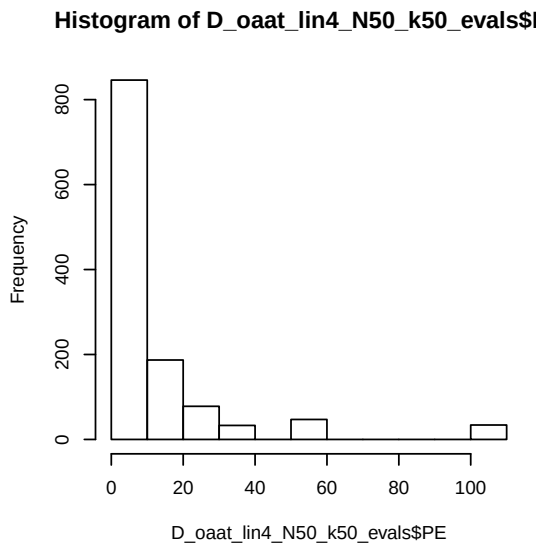


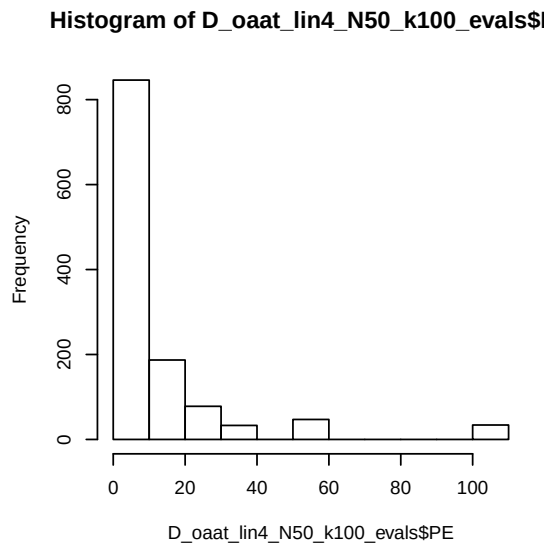
Pairwise potential energies of design points

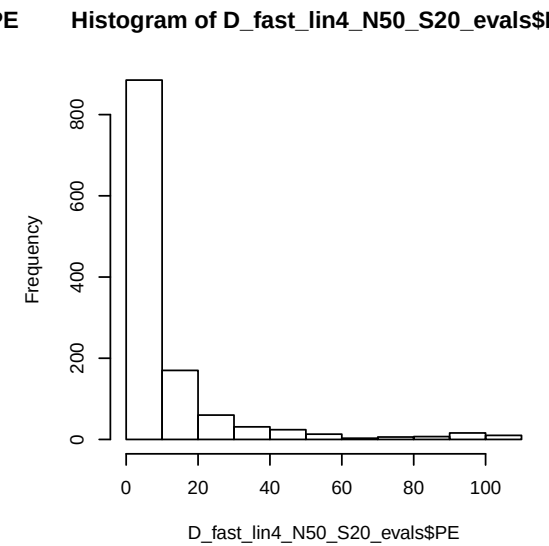








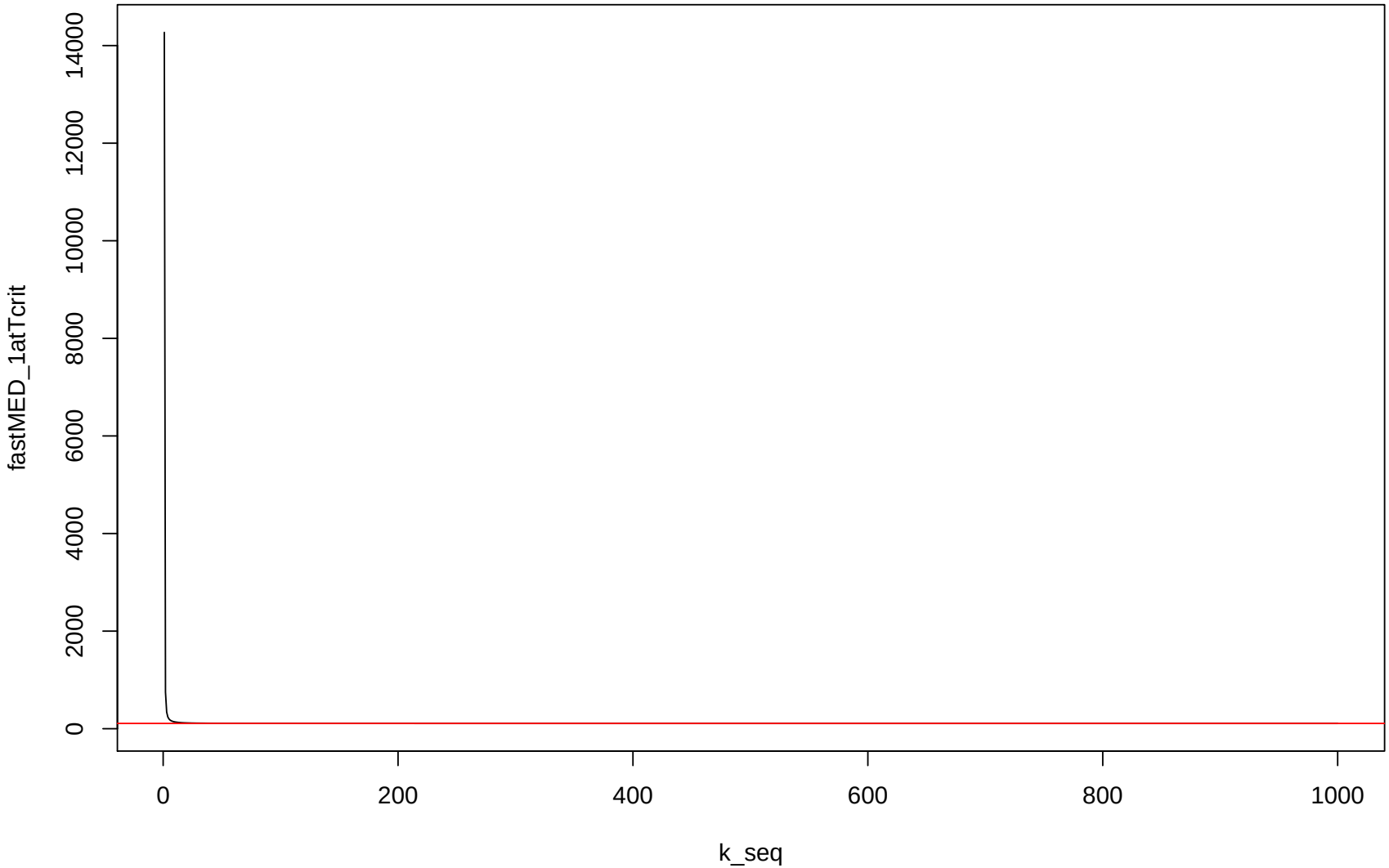




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	14.448	14.712	15.394	15.558	15.558	14.271
Fast	144.42	105.58	105.23	105.32	105.32	108.16
1atT(k=4)	266.3	258.43	259.47	259.44	259.44	240.49
Mean(D)	0.53194	0.5202	0.45769	0.45036	0.45036	0.52515
sd(D)	0.3106	0.2927	0.29233	0.28393	0.28393	0.31158

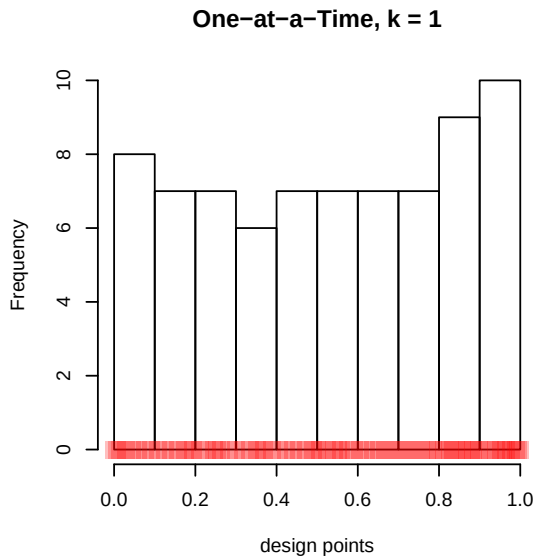
Fast MED Evaluated at One-at-a-Time Criterion

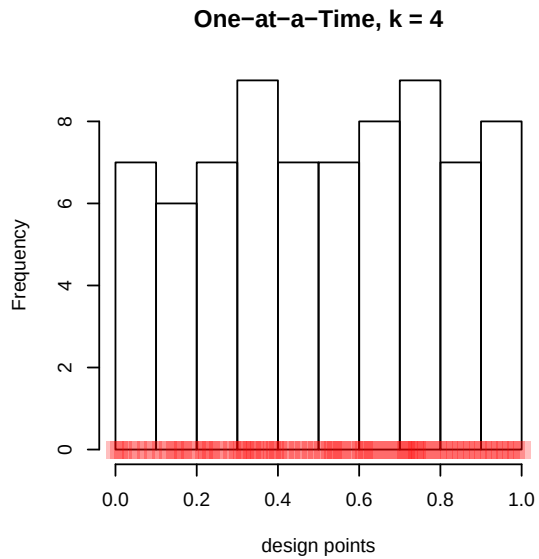


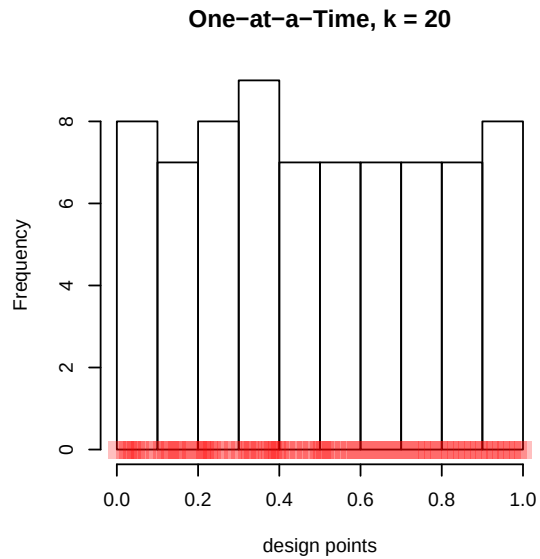

```
## [1] "Fast Criterion :  108.156988894383"

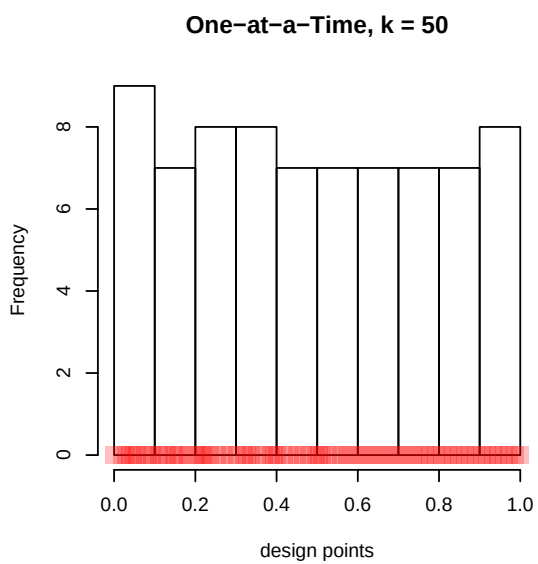
## [1] "One-at-a-Time Criterion at max k :  108.160369698106"
```

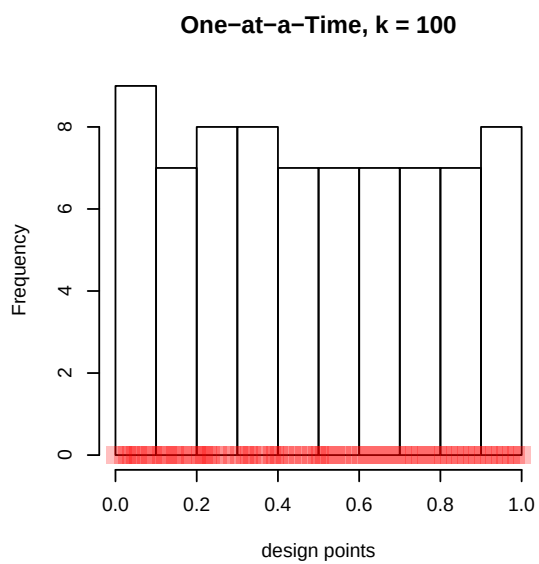
Designs, N = 75

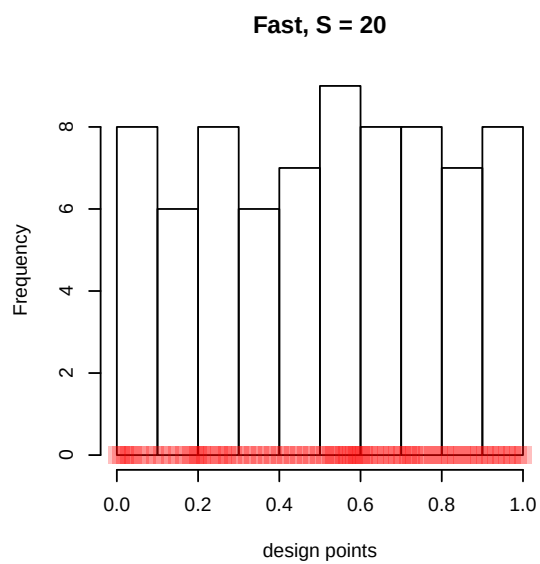

One−at−a−Time, k = 1
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 4
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

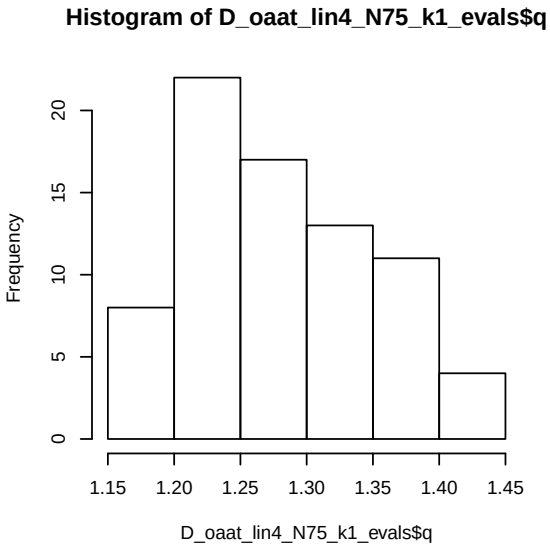

One−at−a−Time, k = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

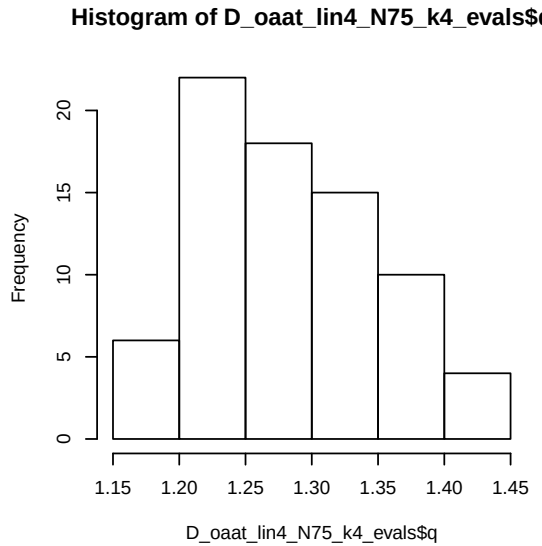

One−at−a−Time, k = 50
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

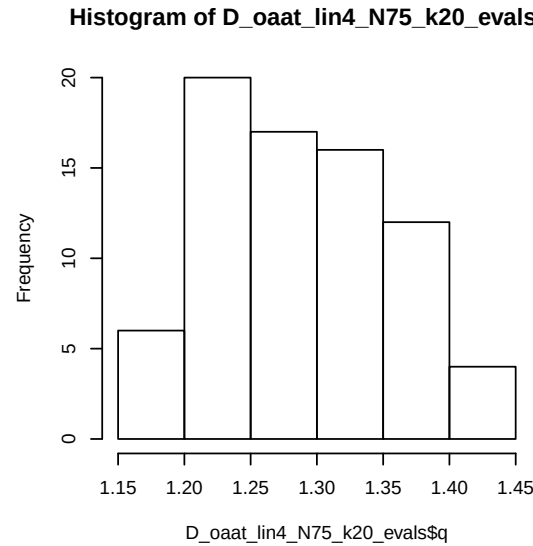

One−at−a−Time, k = 100
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

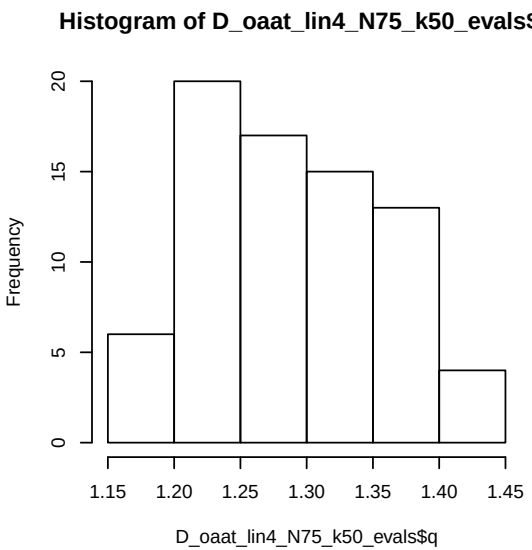

Fast, S = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

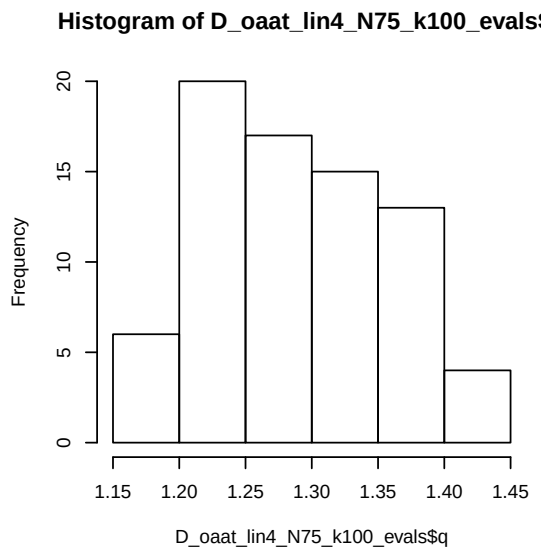
Evaluations of q(.)

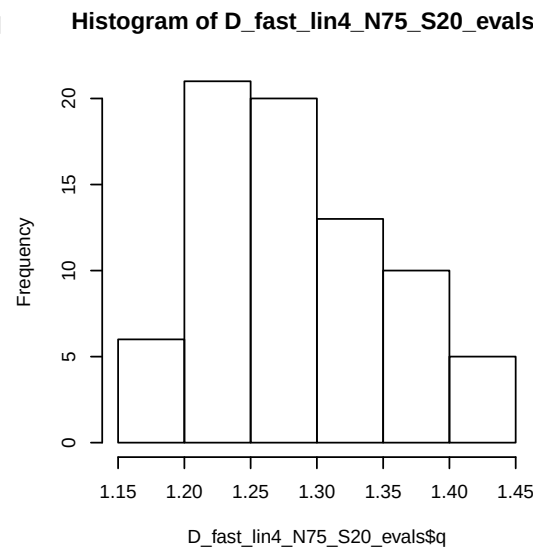




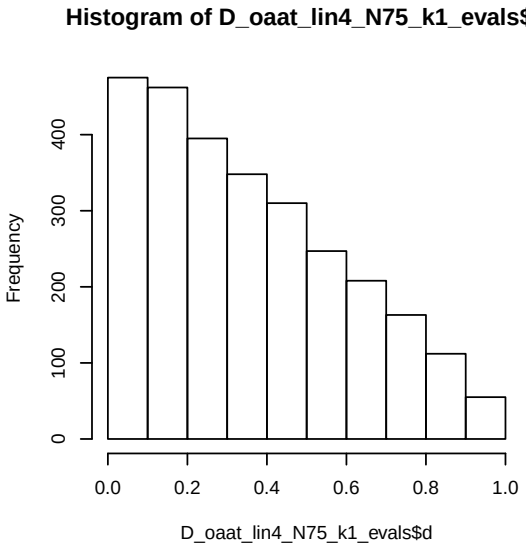


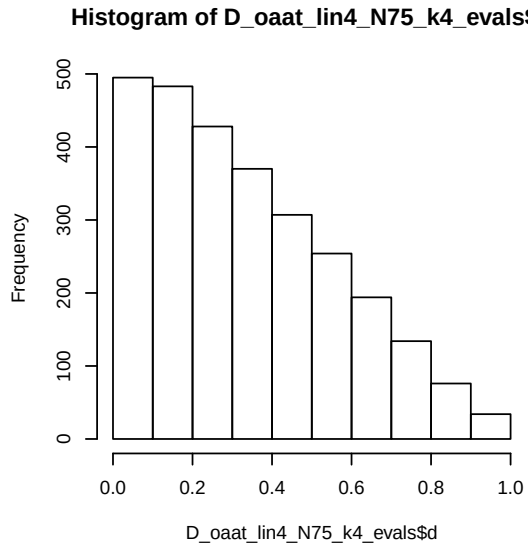


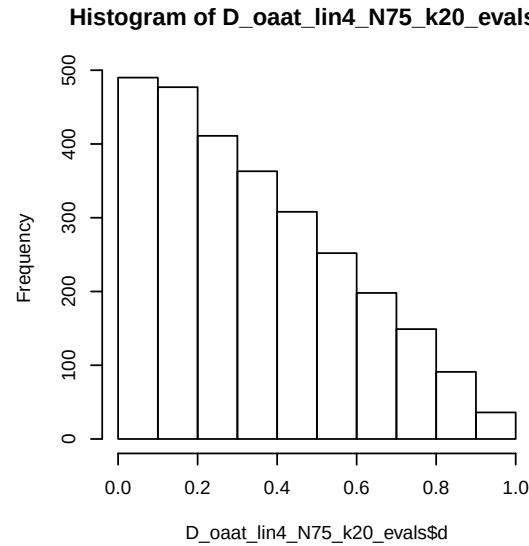


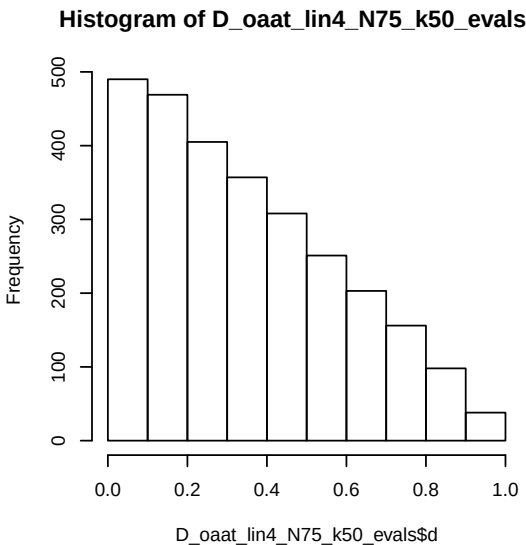


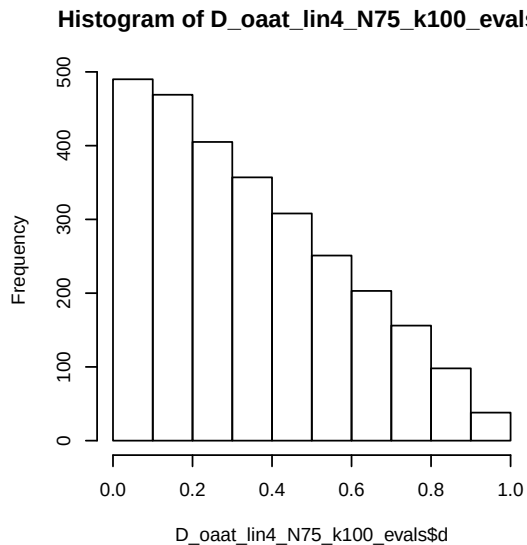
Pairwise distances of design points

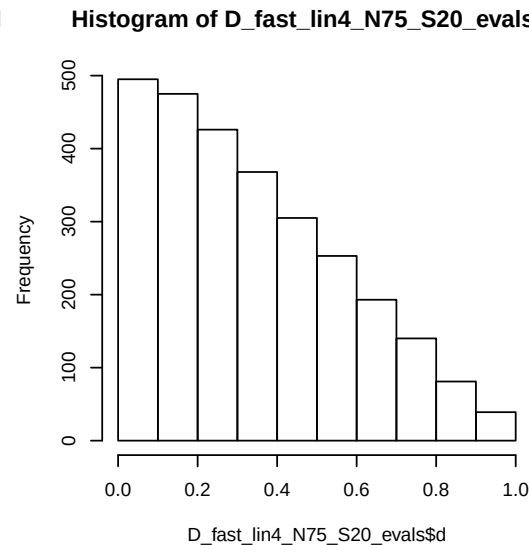




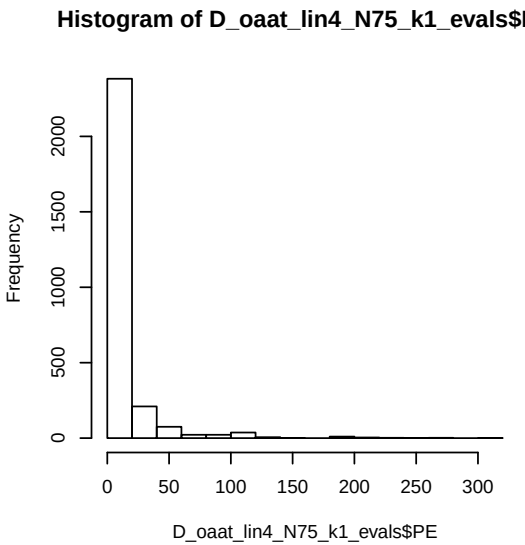


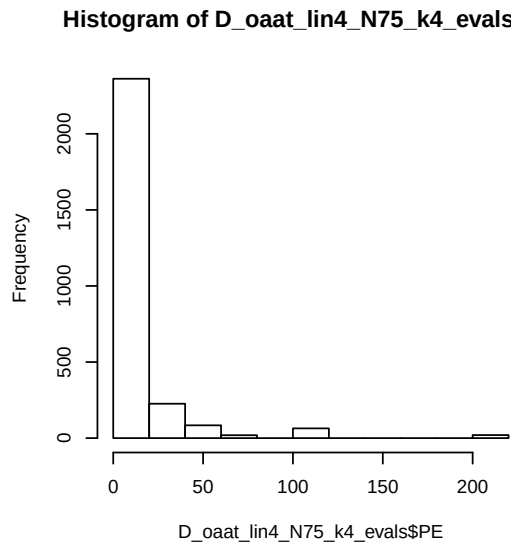


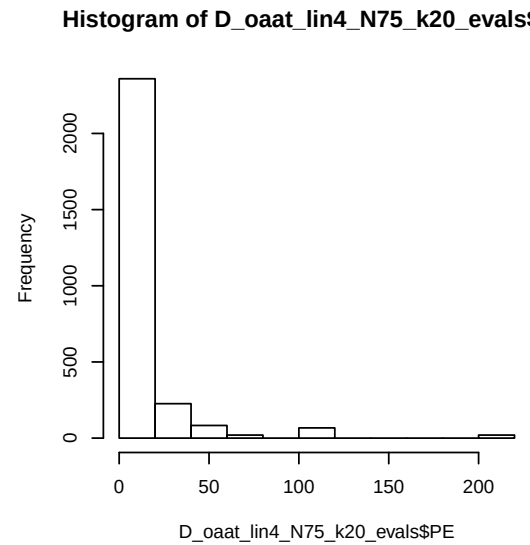


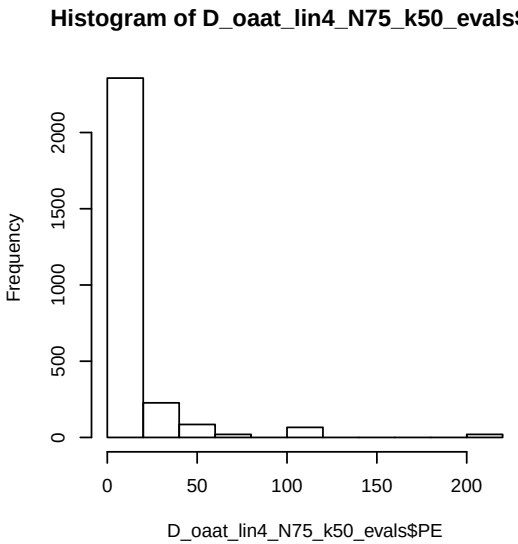


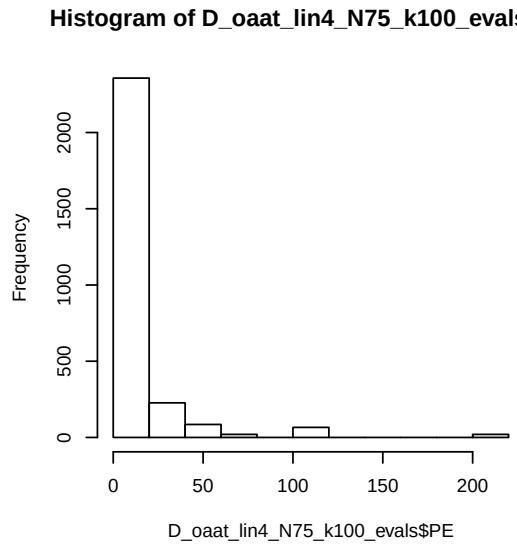
Pairwise potential energies of design points

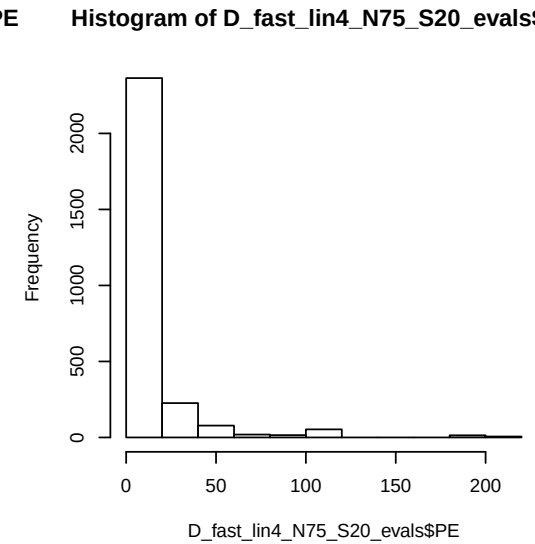








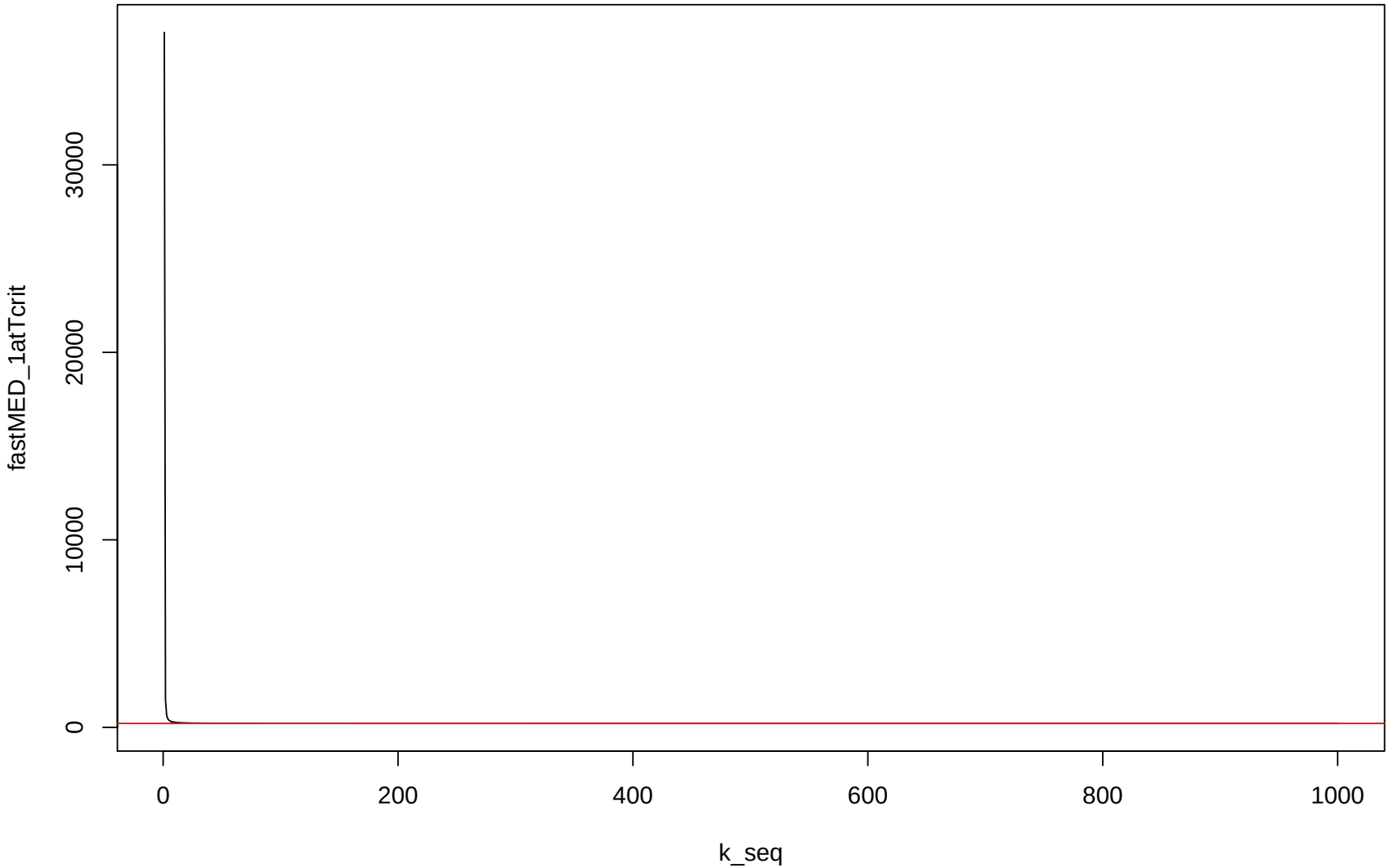




Comparing Evaluations for each N = 75 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	36.335	37.069	37.248	37.135	37.135	37.067
Fast	302.5	210.13	210.08	209.66	209.66	209.51
1atT(k=4)	492.53	465.92	466.77	466.43	466.43	451.56
Mean(D)	0.52681	0.51185	0.48986	0.48604	0.48604	0.50762
sd(D)	0.30757	0.28924	0.2955	0.29894	0.29894	0.2923

Fast MED Evaluated at One-at-a-Time Criterion




```
## [1] "Fast Criterion :  209.513428140087"

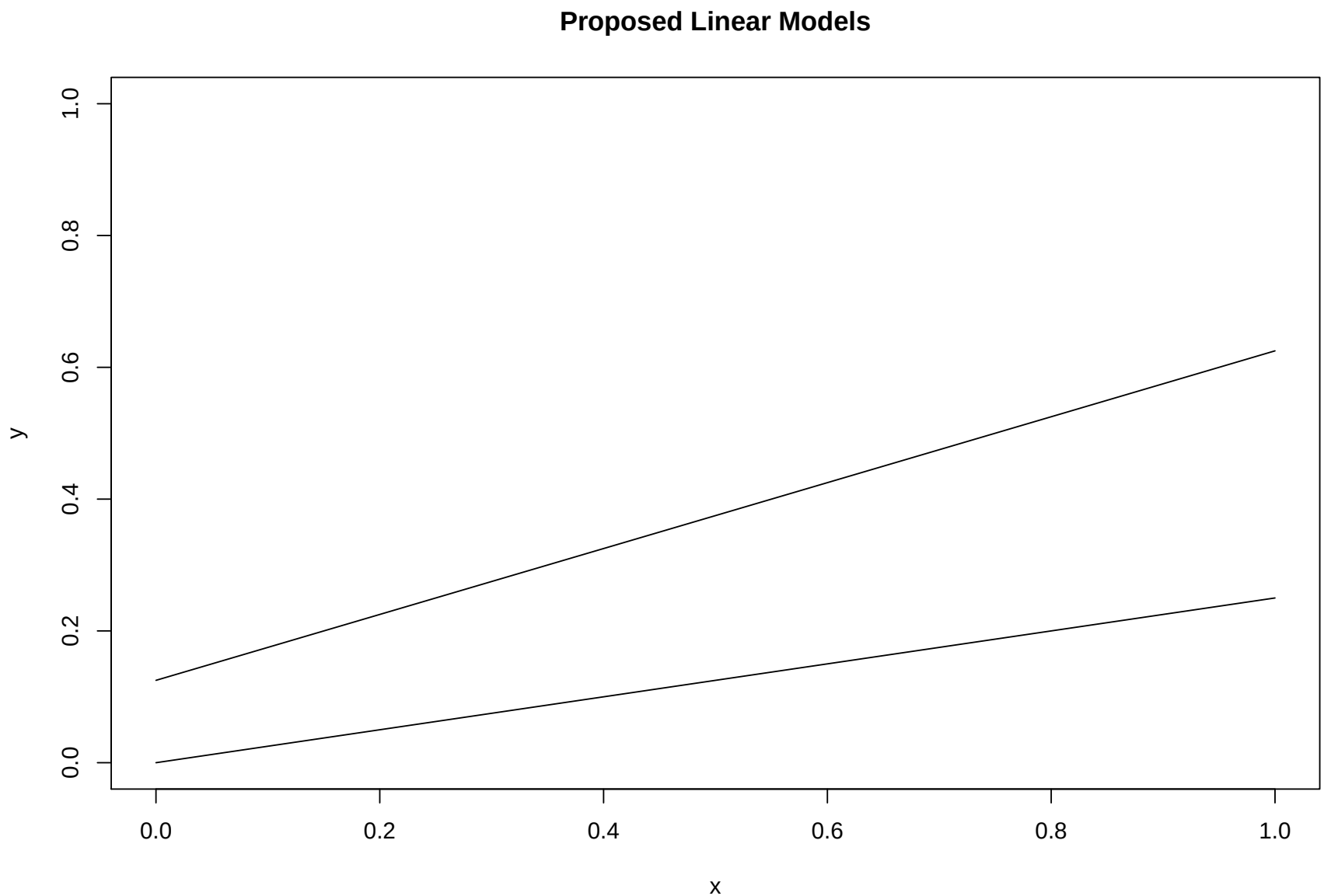
## [1] "One-at-a-Time Criterion at max k :  209.545525843194"
```

Comparing I and III

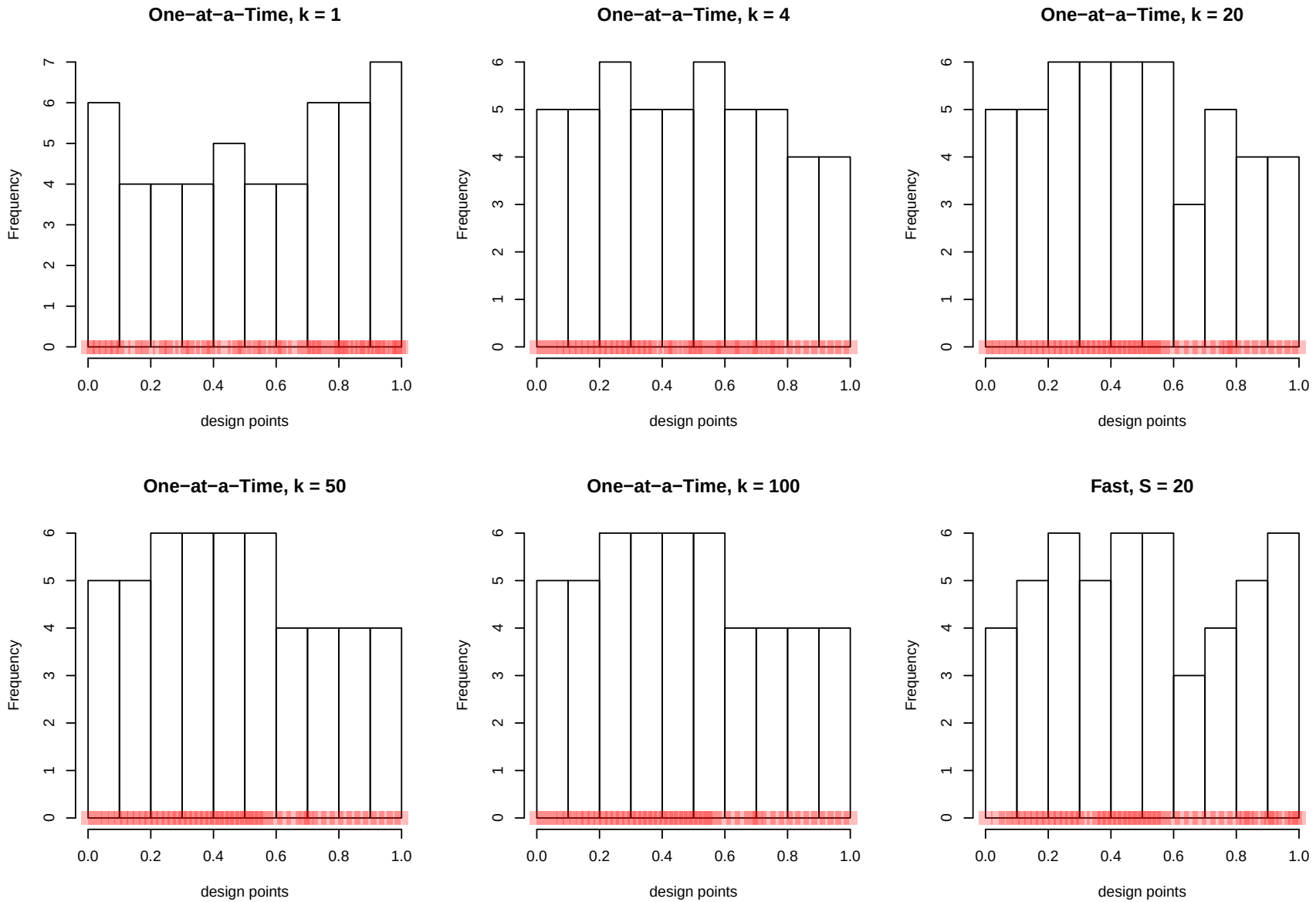
- The designs are exactly the same here as well, regardless of where the intercept is!
- As with the comparison of I and III, all that matters is how much distance there is between the two functions $f_1(x)$ and $f_2(x)$, at a given point x.

V. less space in-between

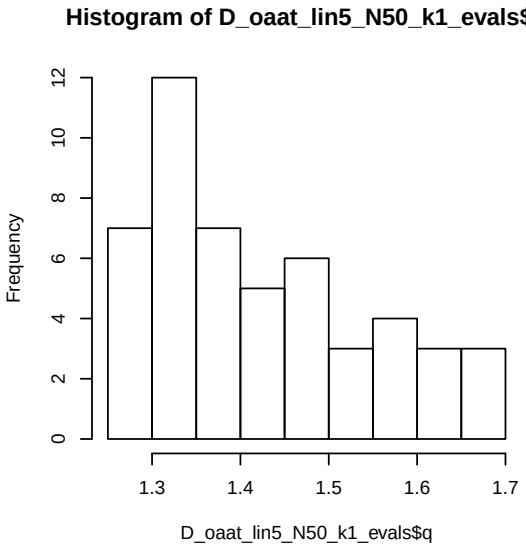
V. Proposed Linear Models

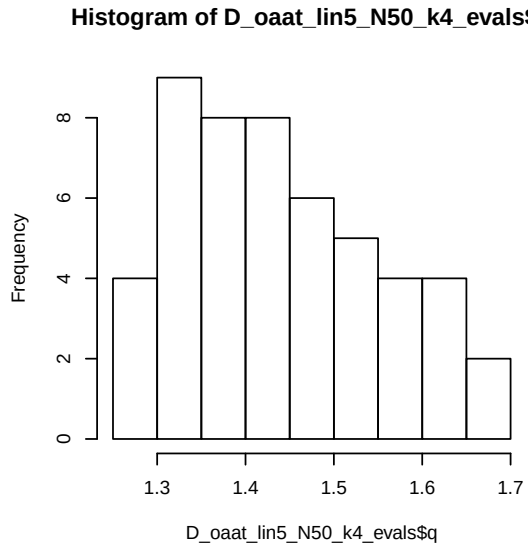


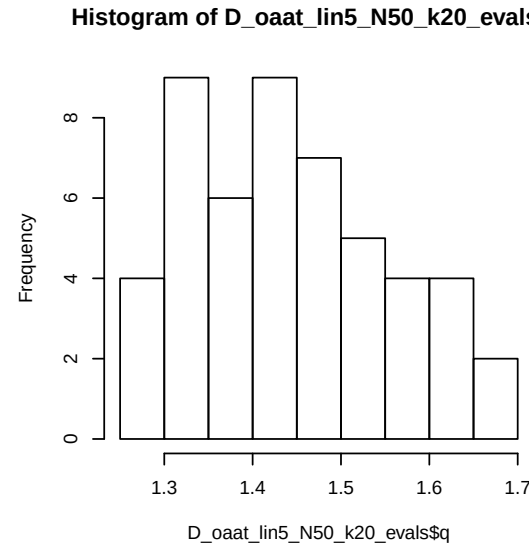
Designs, N = 50

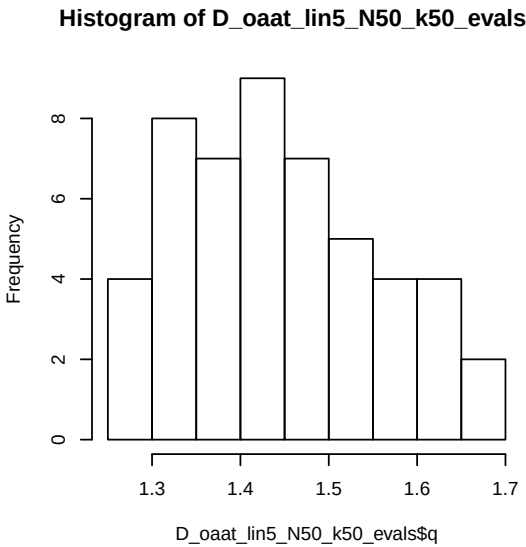

One−at−a−Time, k = 1
One−at−a−Time, k = 4
One−at−a−Time, k = 20
One−at−a−Time, k = 50
One−at−a−Time, k = 100
Fast, S = 20
Frequency
design points
0.0
0.2
0.4
0.6
0.8
1.0

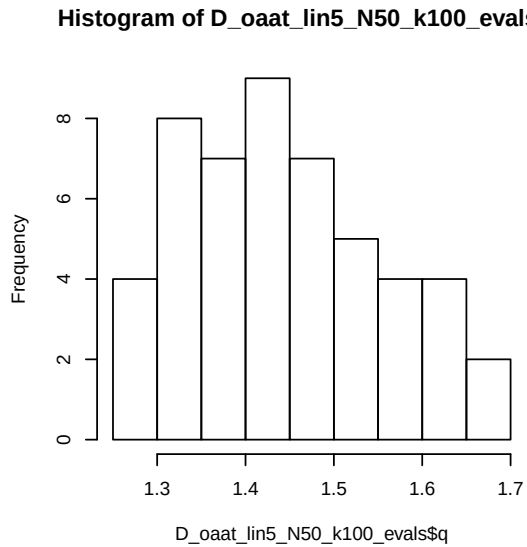
Evaluations of q(.)

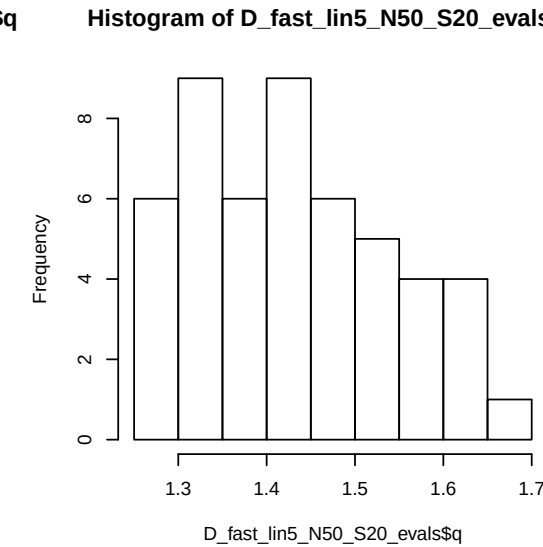




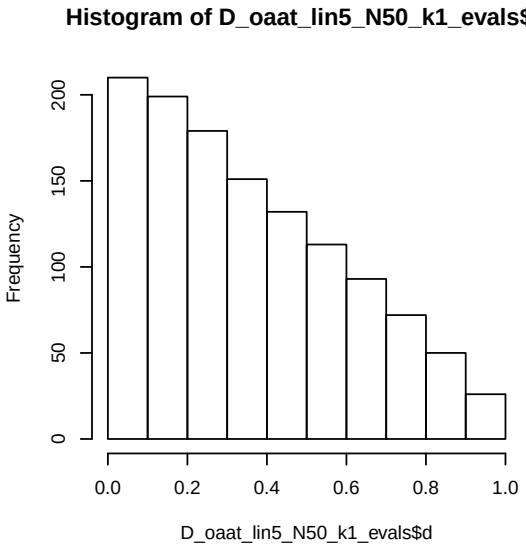


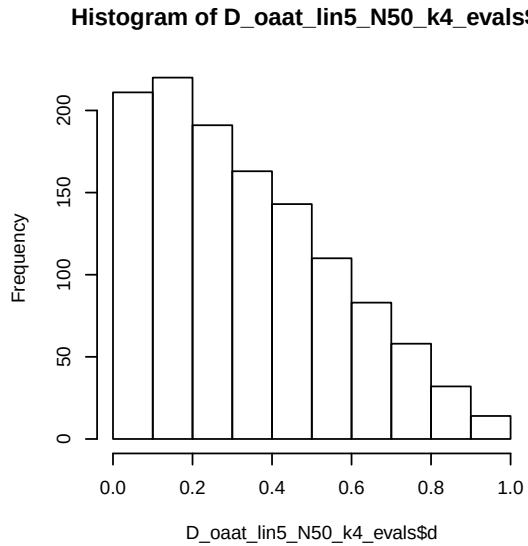


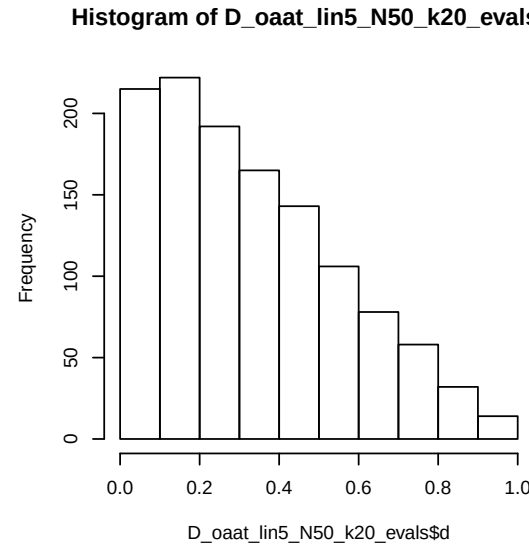


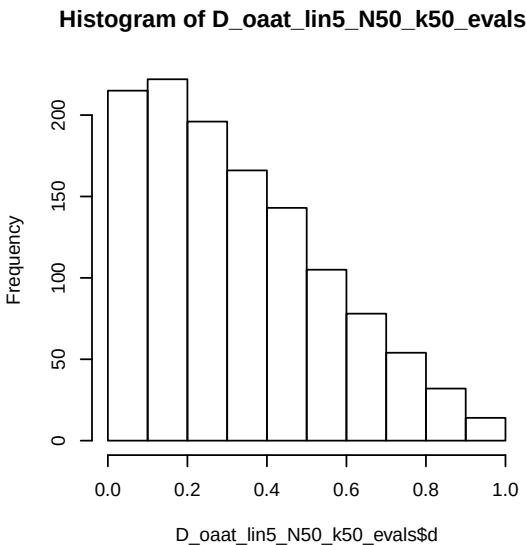


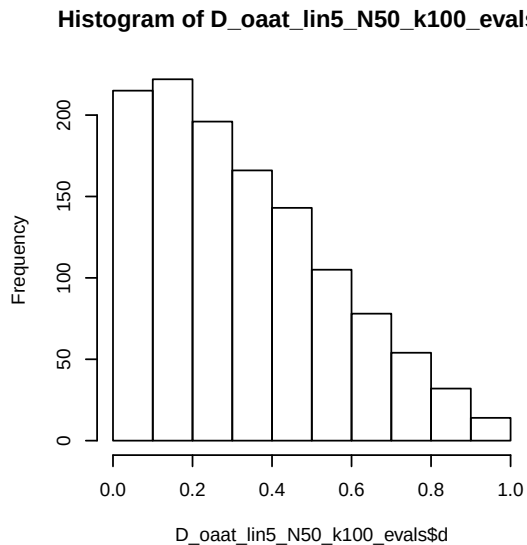
Pairwise distances of design points

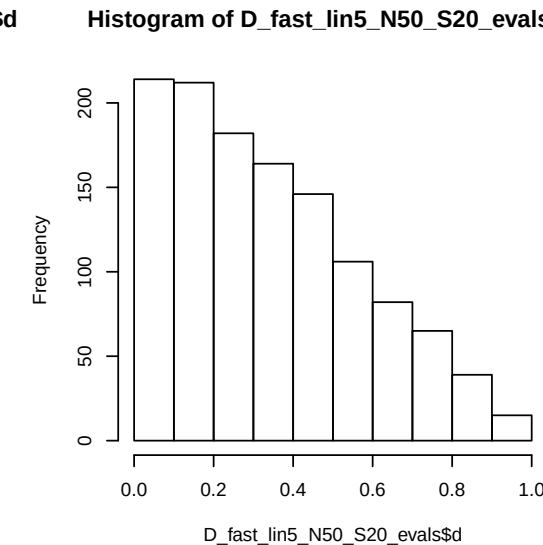




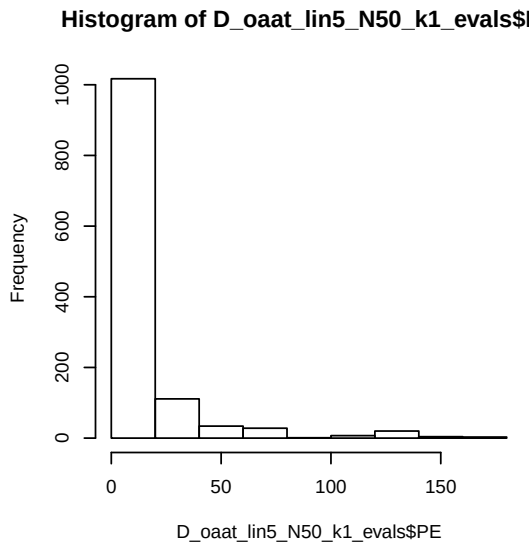


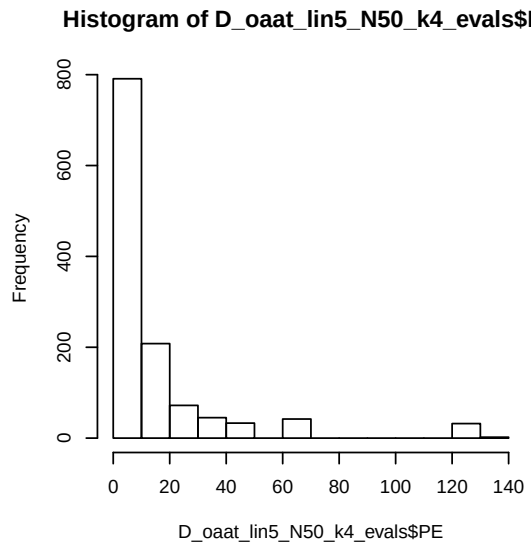


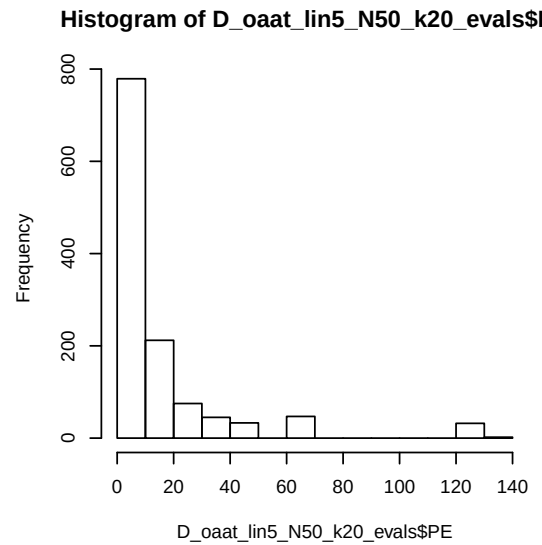


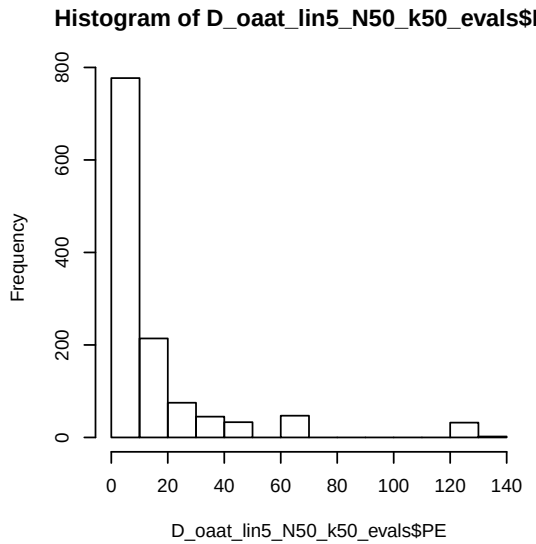


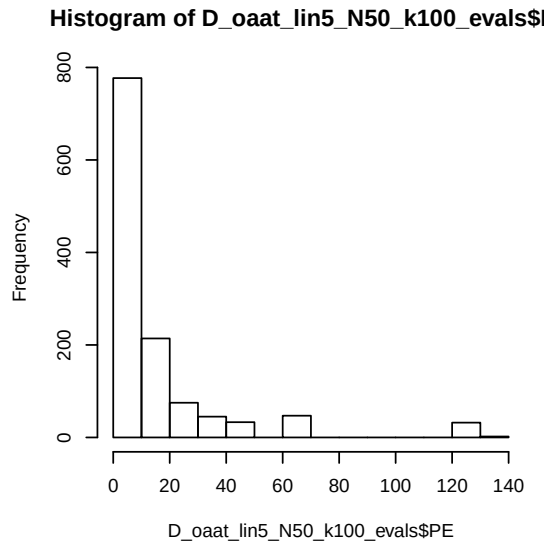
Pairwise potential energies of design points

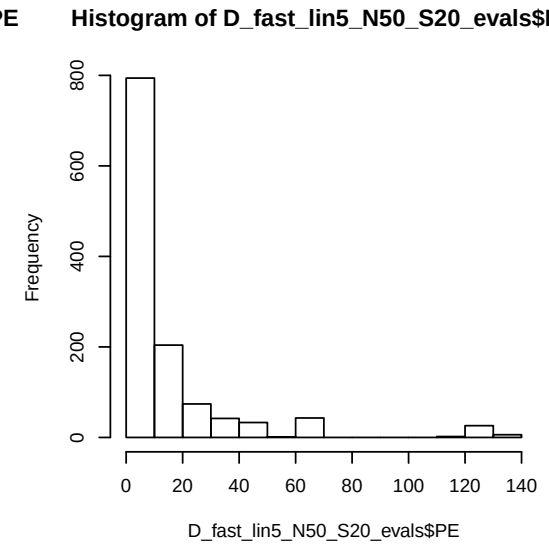








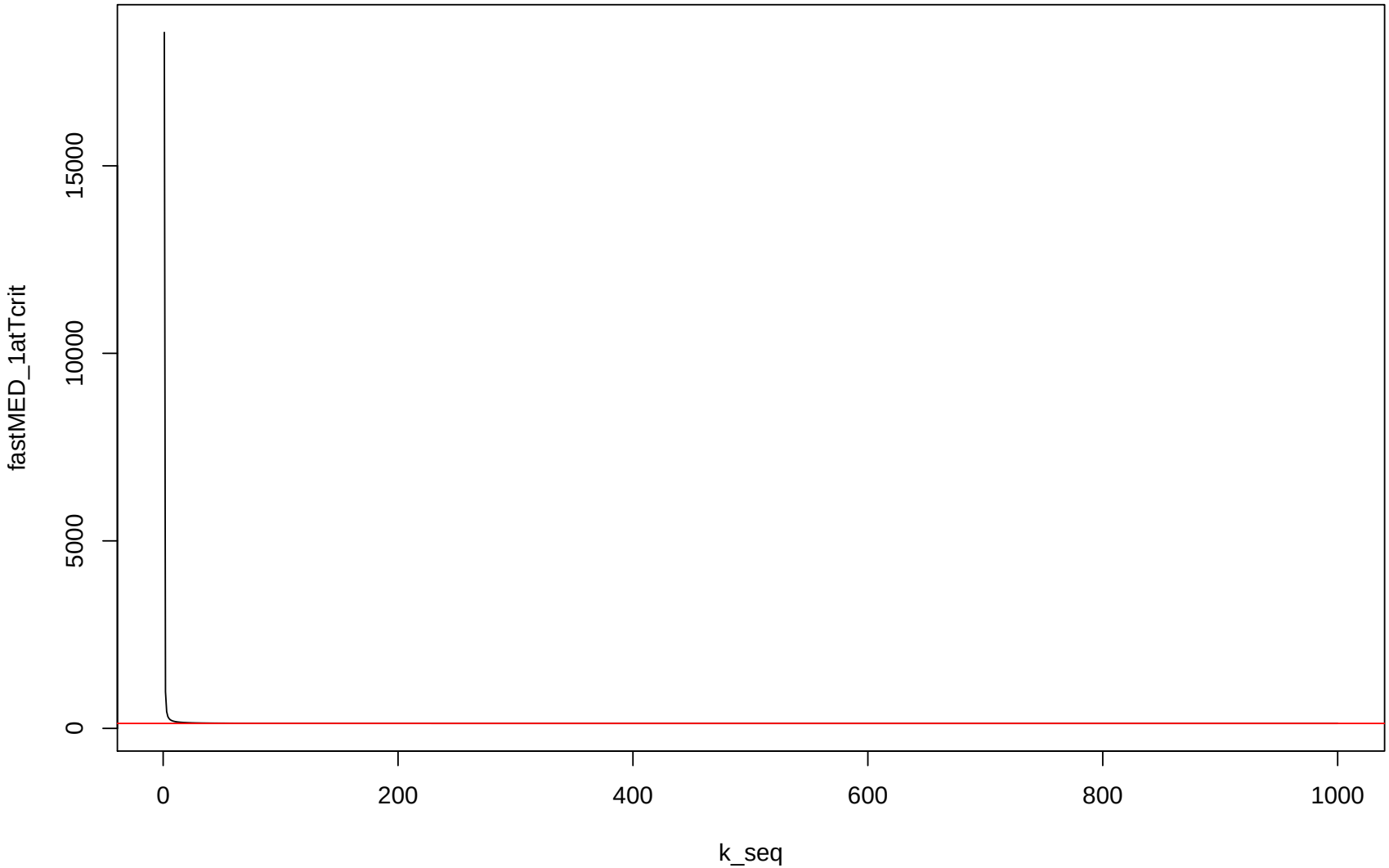




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	17.834	18.691	19.038	19.067	19.064	18.559
Fast	179.04	130.52	130.62	130.94	130.93	132.39
1atT(k=4)	328.02	318.2	317.77	317.62	317.56	317.09
Mean(D)	0.53486	0.48047	0.47149	0.47004	0.47008	0.5038
sd(D)	0.30937	0.2875	0.28524	0.28363	0.28367	0.29313

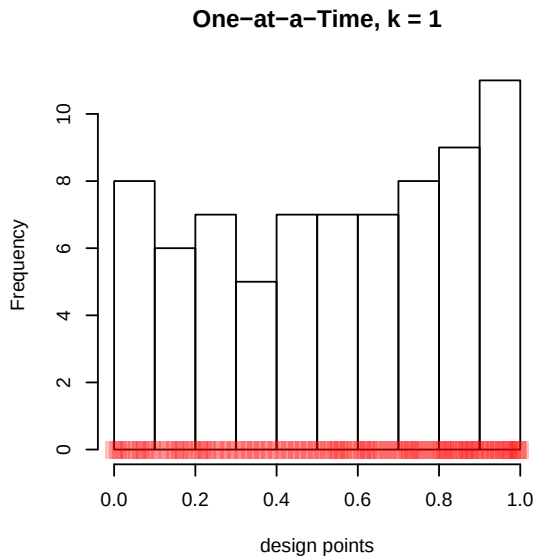
Fast MED Evaluated at One-at-a-Time Criterion

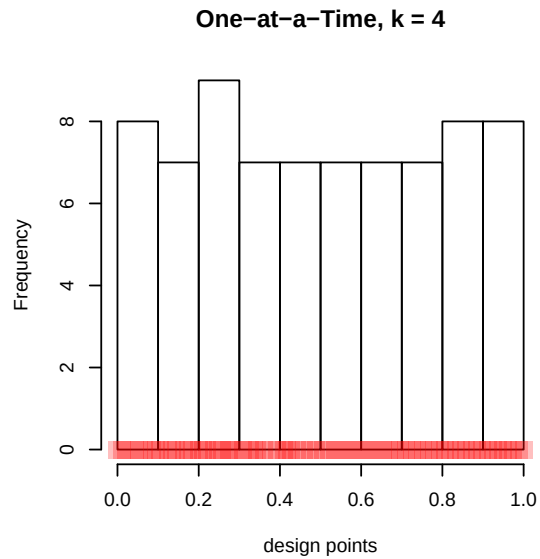


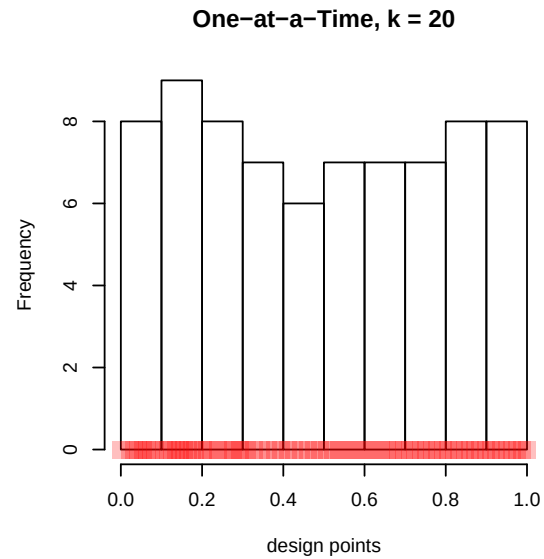

```
## [1] "Fast Criterion :  132.385179772763"

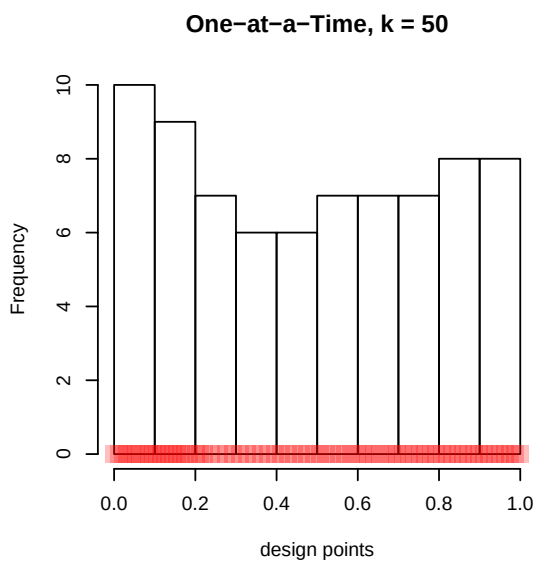
## [1] "One-at-a-Time Criterion at max k :  132.385408213725"
```

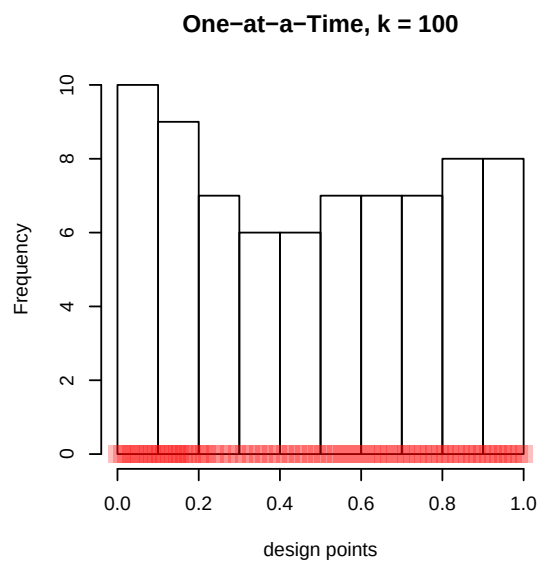
Designs, N = 75

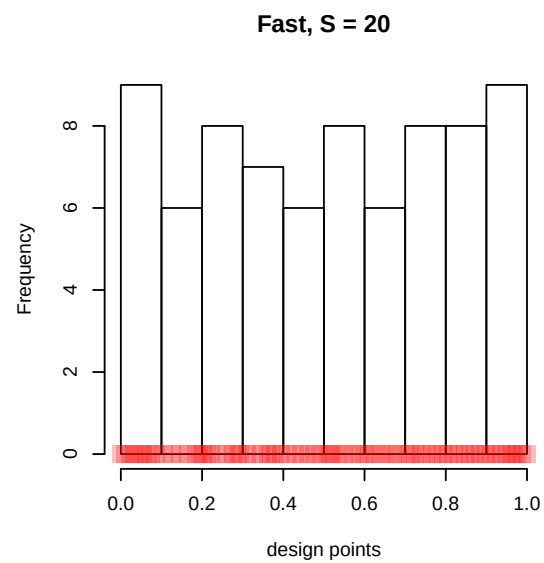

One−at−a−Time, k = 1
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 4
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

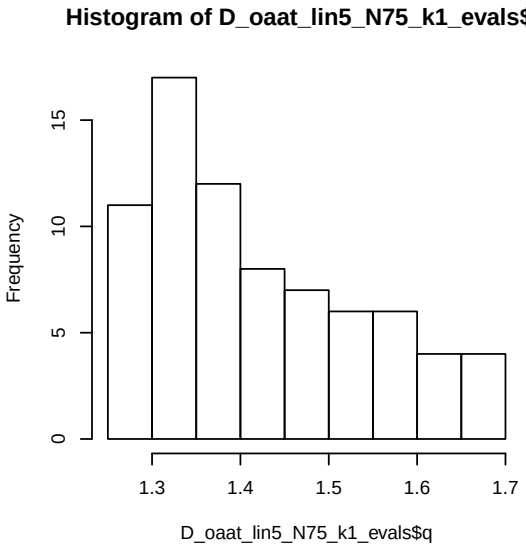

One−at−a−Time, k = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

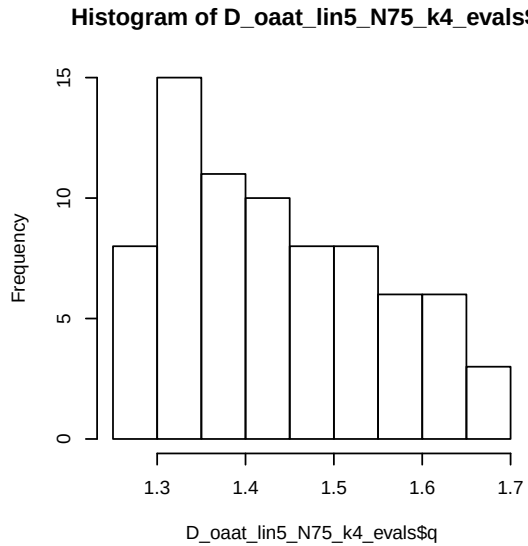

One−at−a−Time, k = 50
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

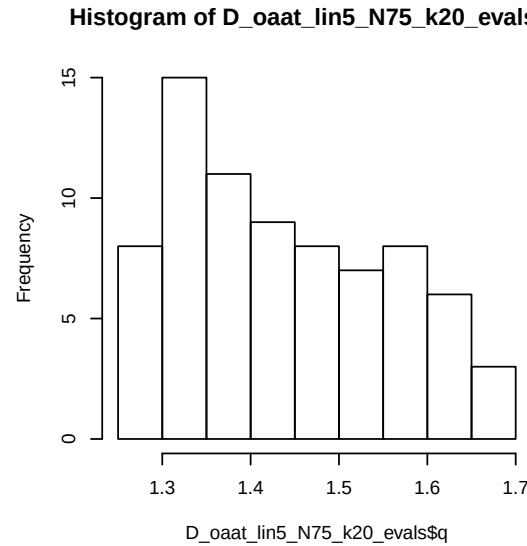

One−at−a−Time, k = 100
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

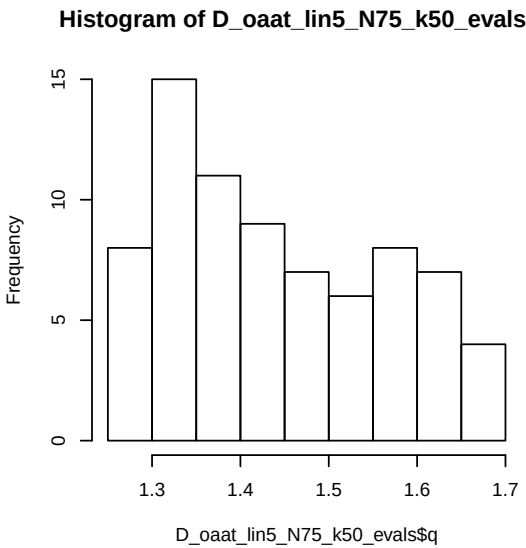

Fast, S = 20
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points

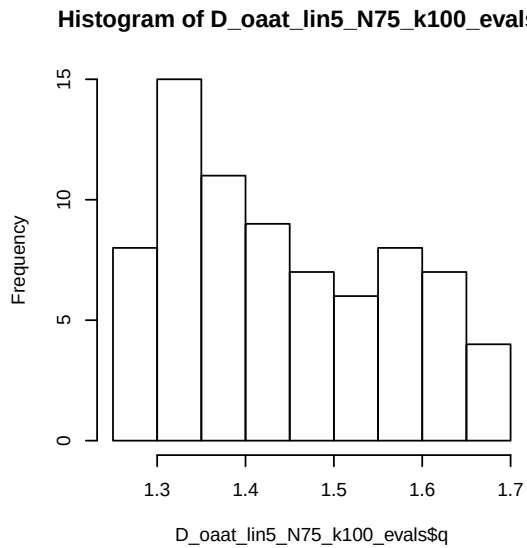
Evaluations of q(.)

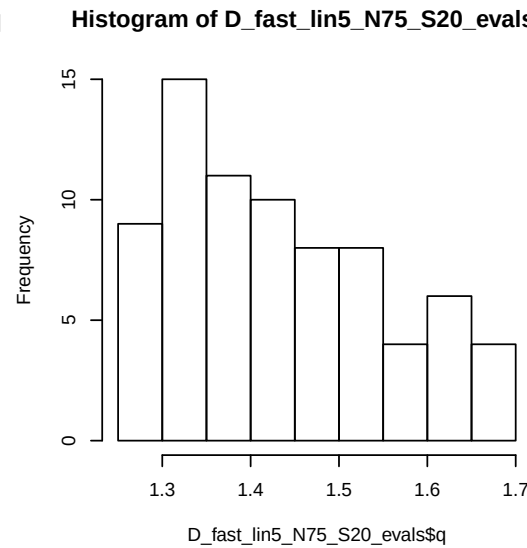




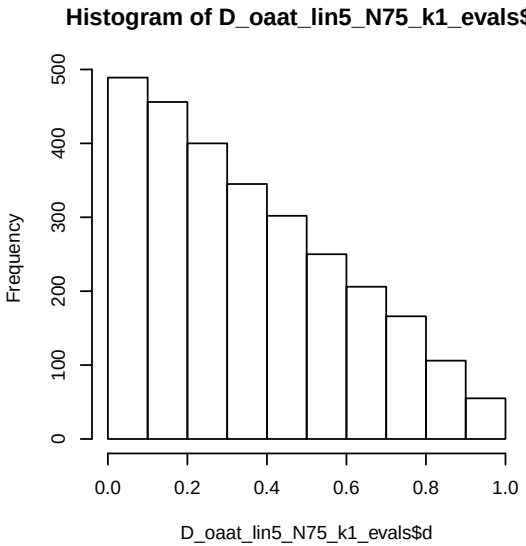


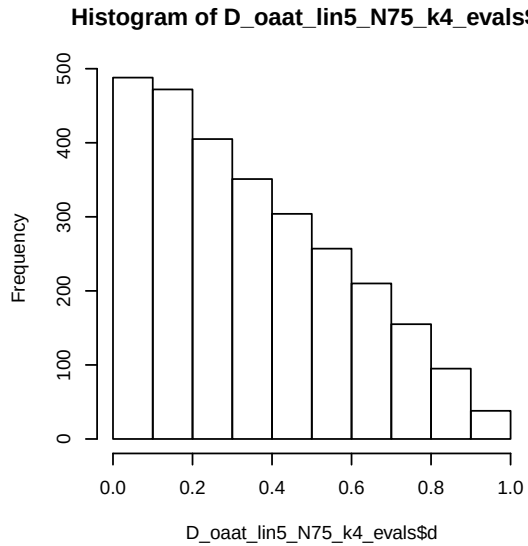


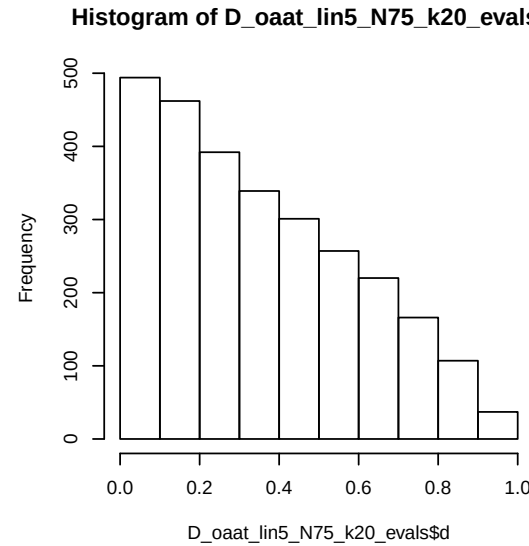


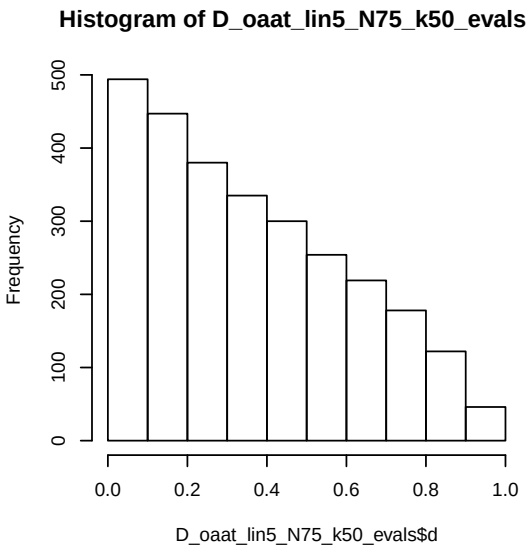


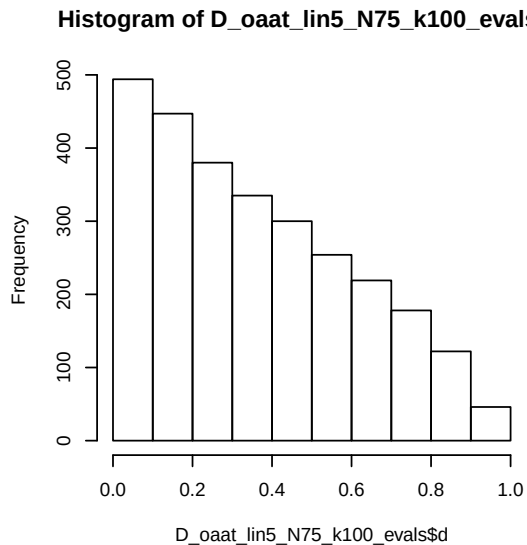
Pairwise distances of design points

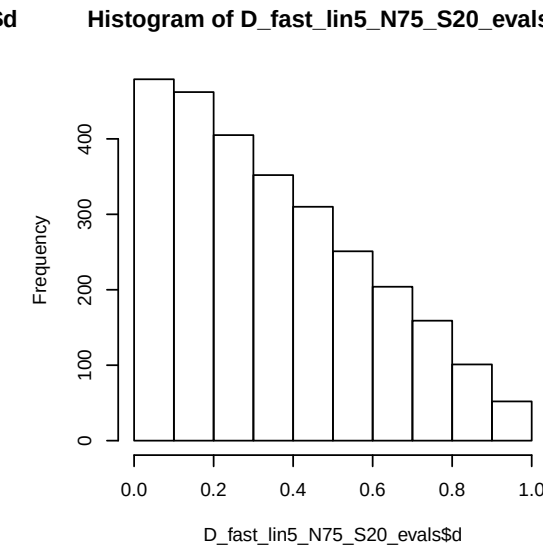




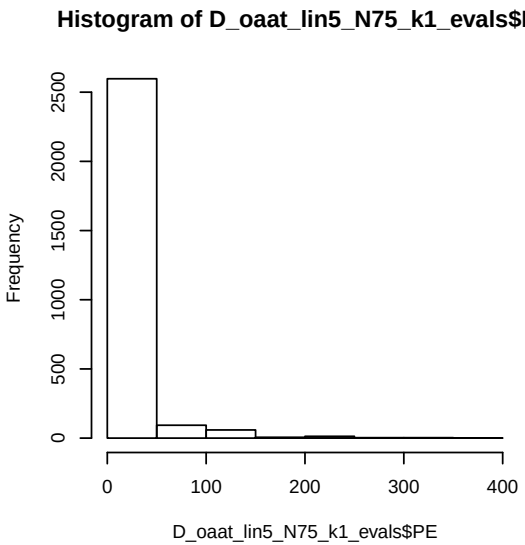


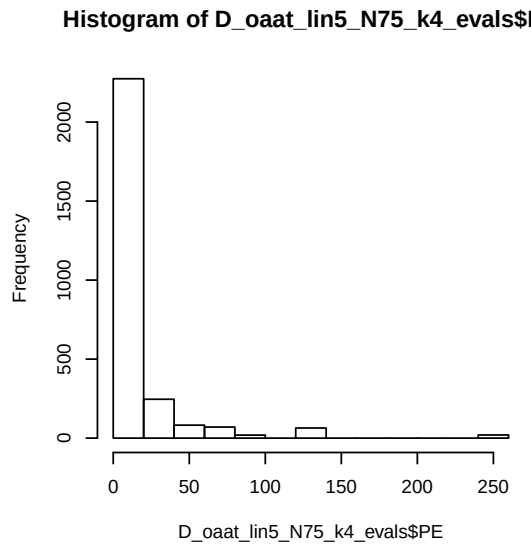


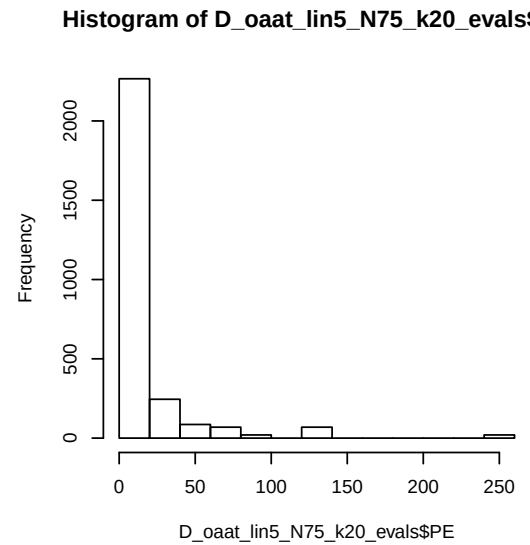


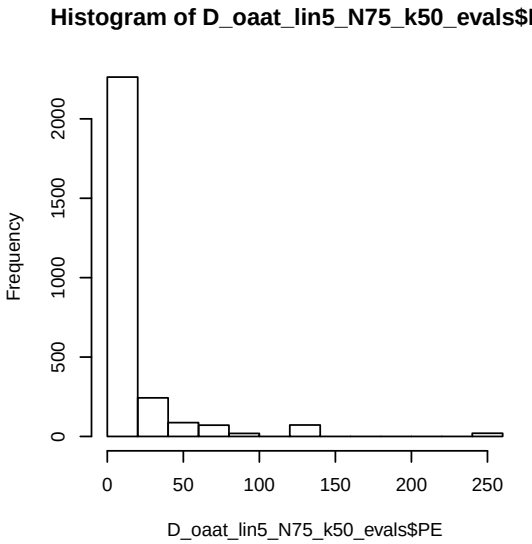


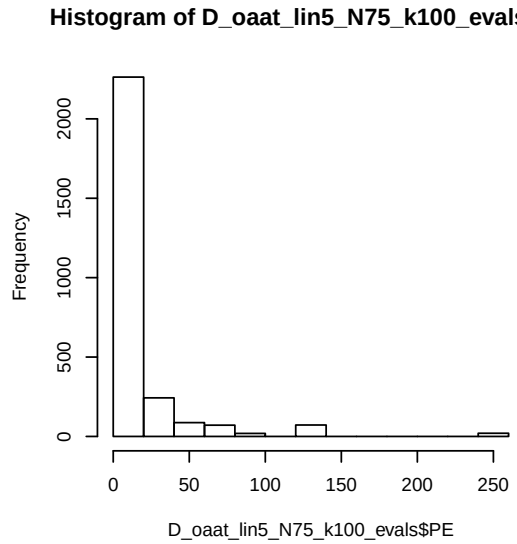
Pairwise potential energies of design points

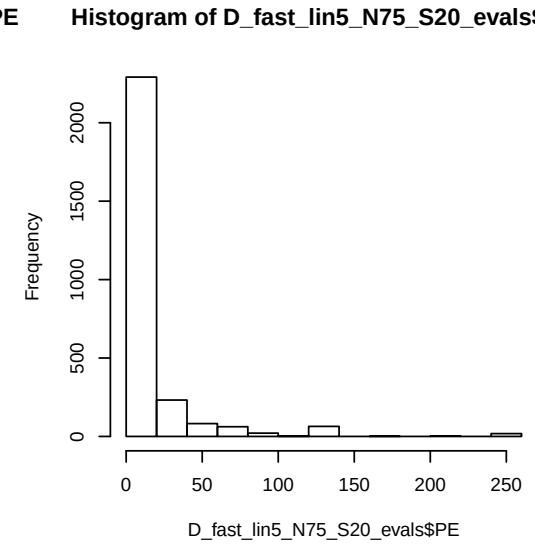








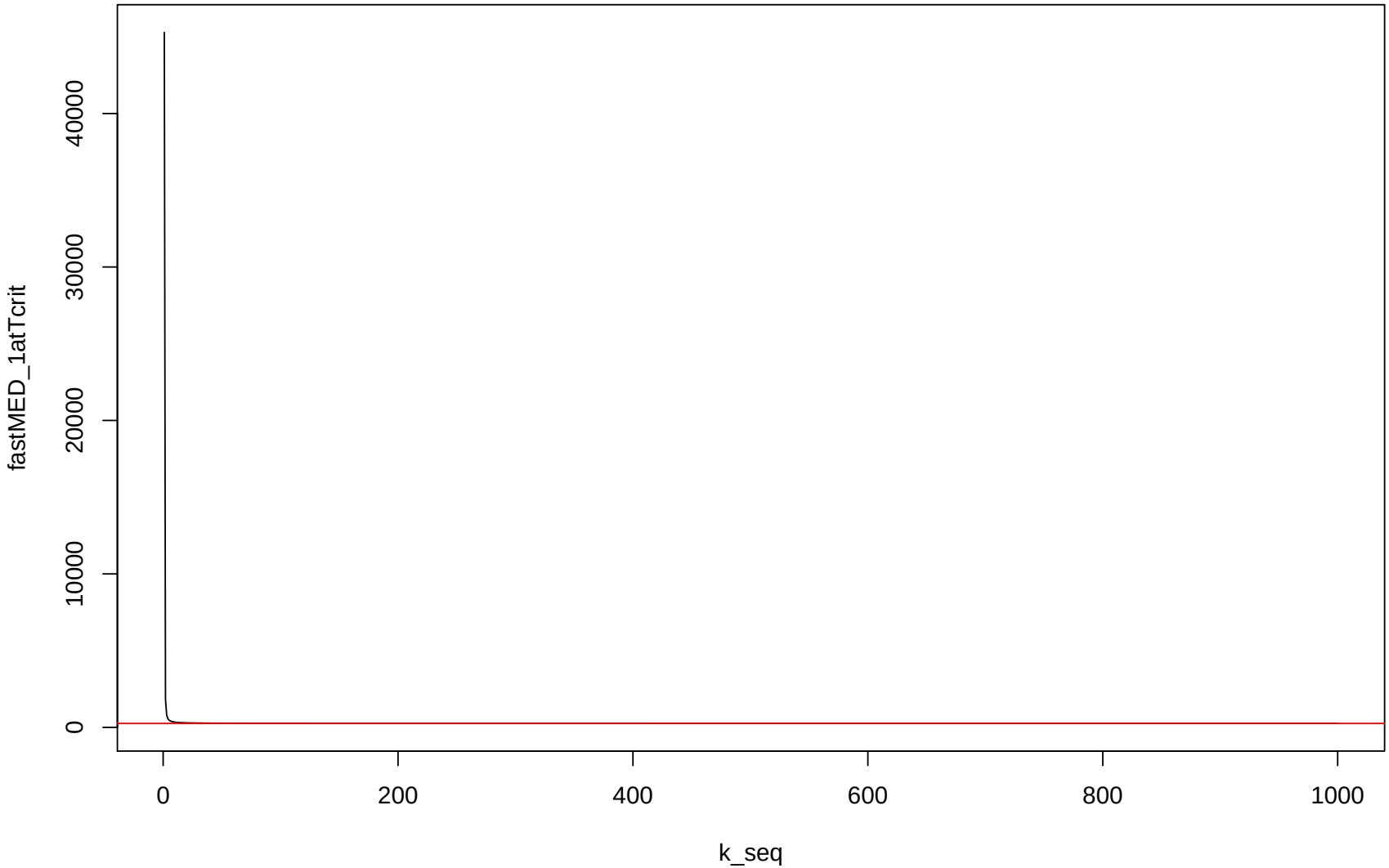




Comparing Evaluations for each N = 75 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	44.825	45.667	46.168	46.274	46.273	45.291
Fast	377.04	257.68	256.01	255.9	255.9	256.54
1atT(k=4)	606.54	571.78	571.35	571.96	571.96	567.94
Mean(D)	0.53962	0.49804	0.49274	0.48676	0.4868	0.50897
sd(D)	0.30624	0.29905	0.30355	0.31011	0.31014	0.30376

Fast MED Evaluated at One-at-a-Time Criterion

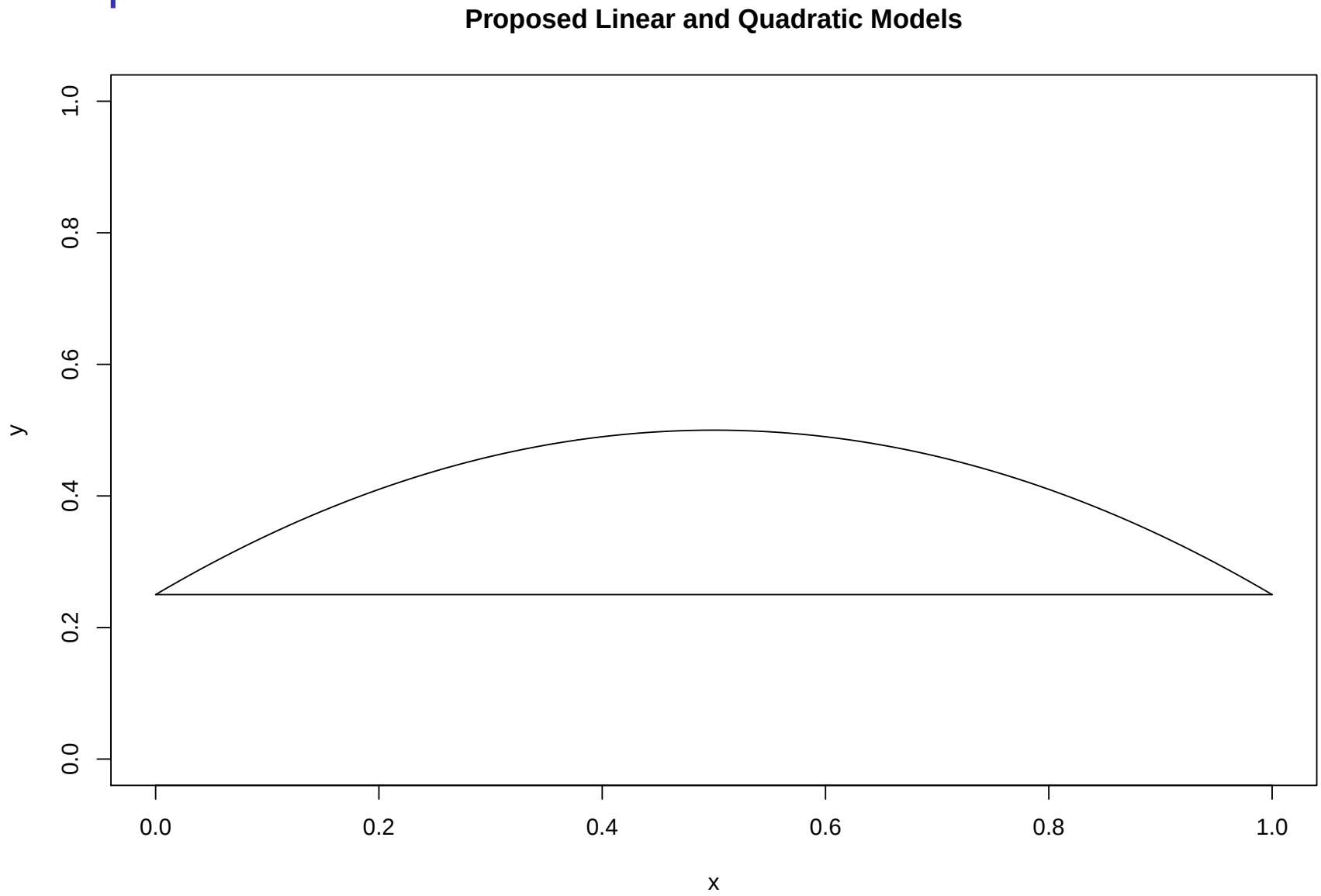



```
## [1] "Fast Criterion :  256.544891845871"

## [1] "One-at-a-Time Criterion at max k :  256.70600793309"
```

VI. linear vs quadratic

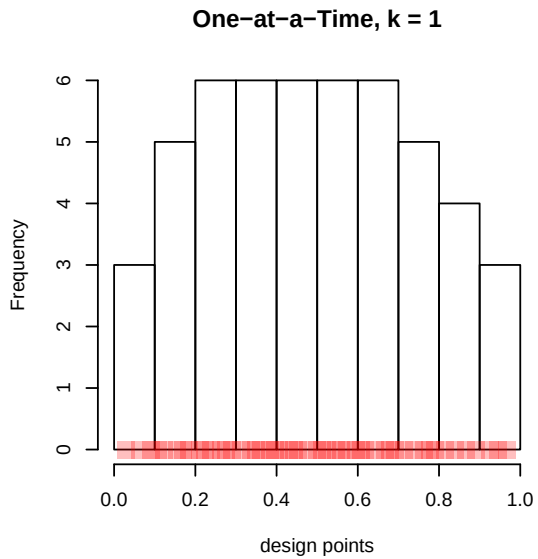
VI. Proposed Linear Models

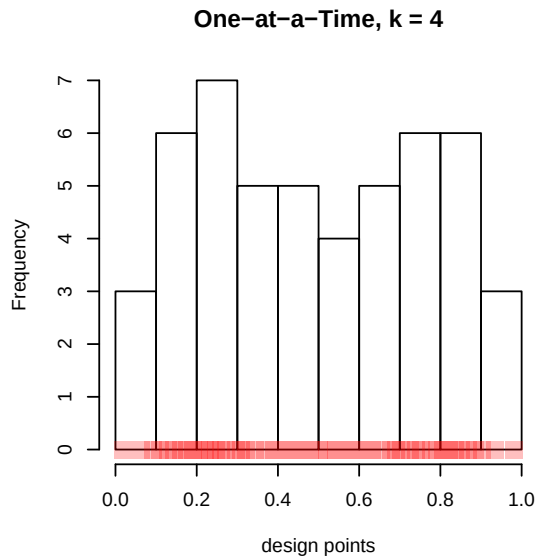


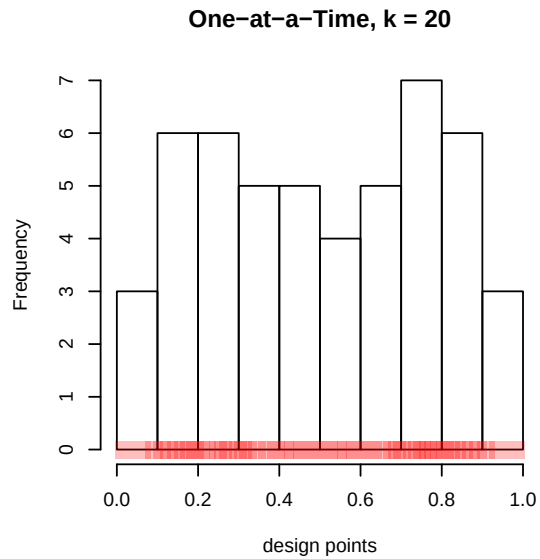

```
## Warning in calculateEvals(D_oaat_lin6_N50_k1, N, mean_beta0, mean_beta1, :
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1

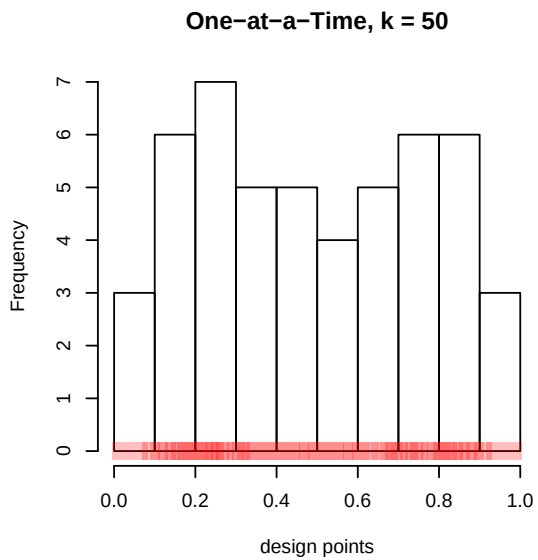
## Warning in calculateEvals(D_oaat_lin6_N50_k4, N, mean_beta0, mean_beta1, :
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

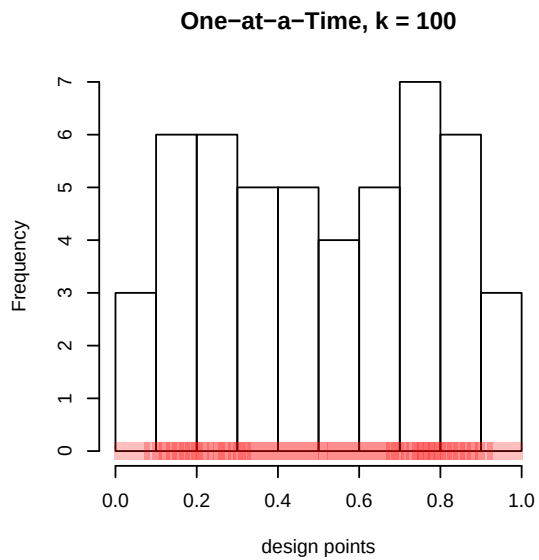
Designs, N = 50

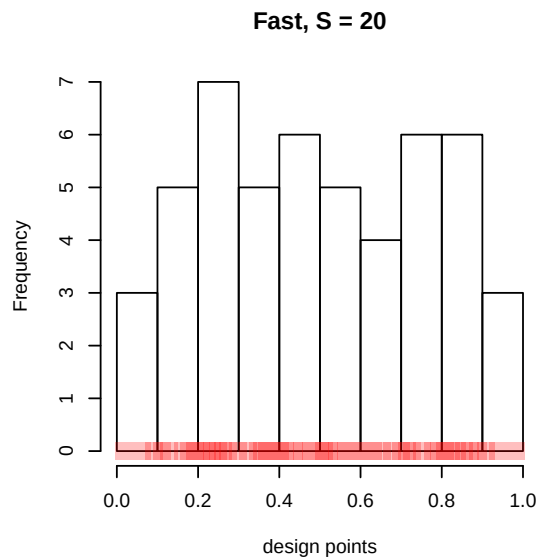

One−at−a−Time, k = 1
Frequency
0
1
2
3
4
5
6
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 4
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
design points

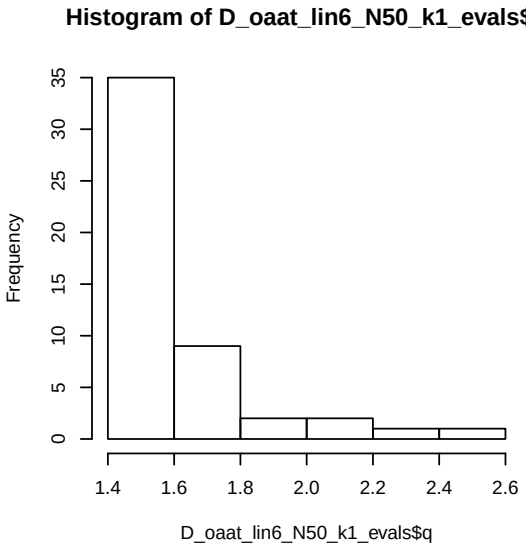

One−at−a−Time, k = 20
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
design points

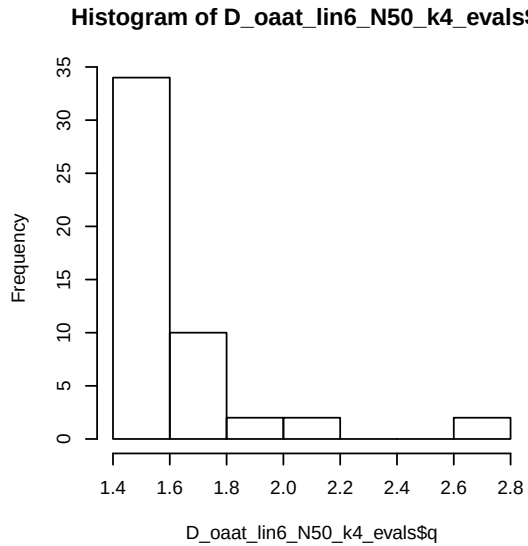

One−at−a−Time, k = 50
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
design points

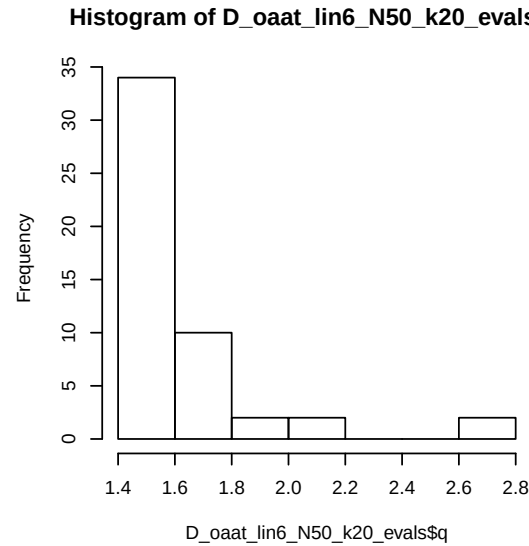

One−at−a−Time, k = 100
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
design points

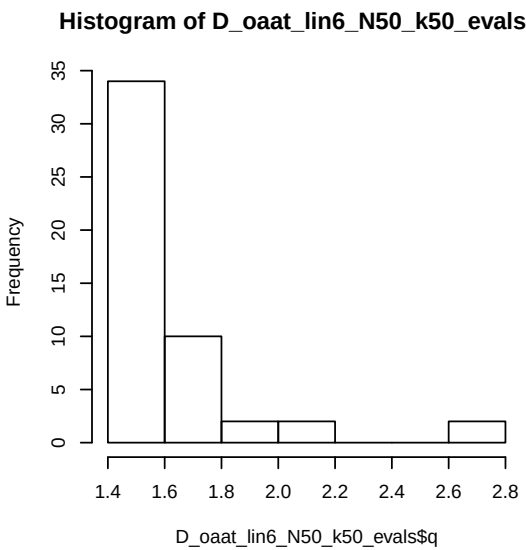

Fast, S = 20
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
design points

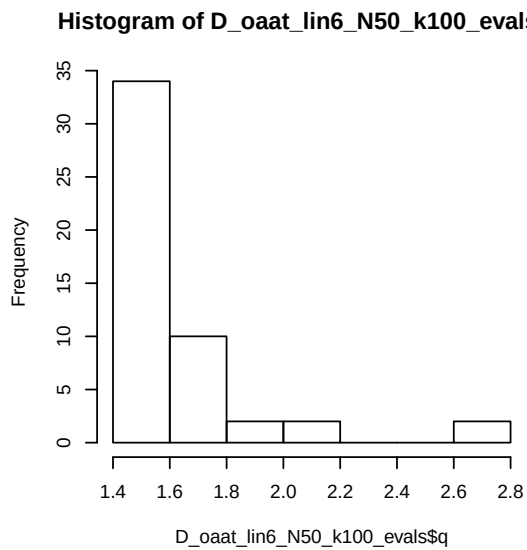
Evaluations of q(.)

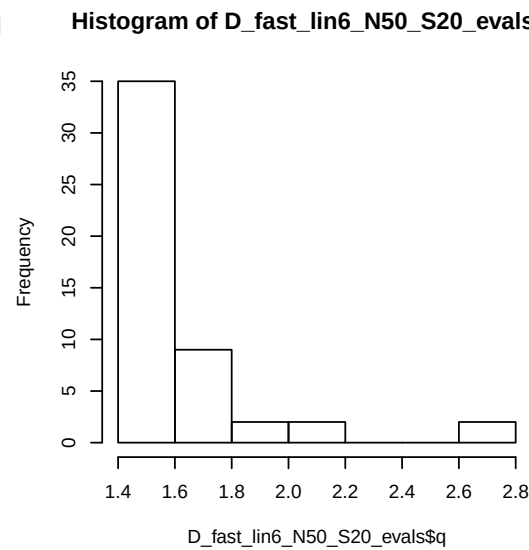




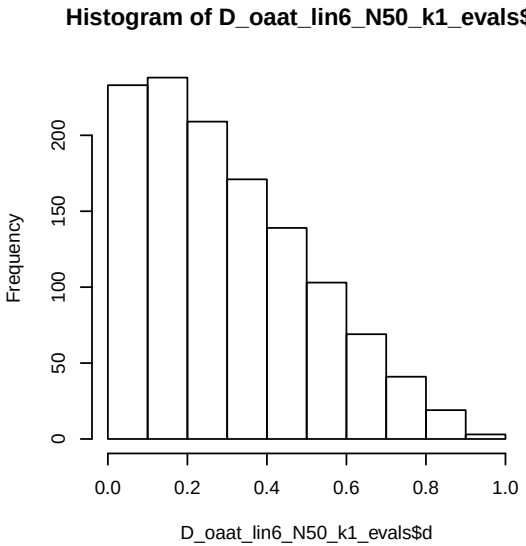


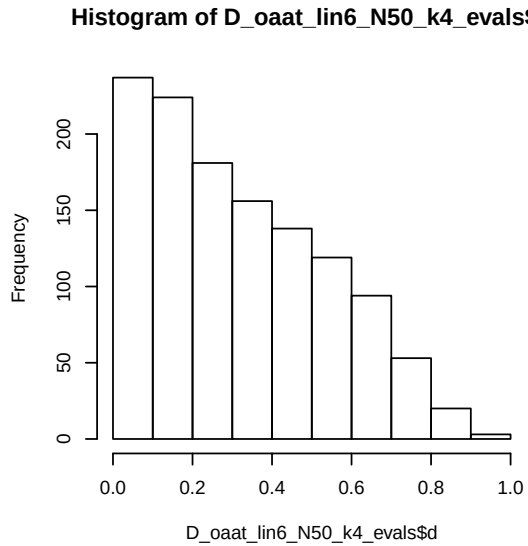


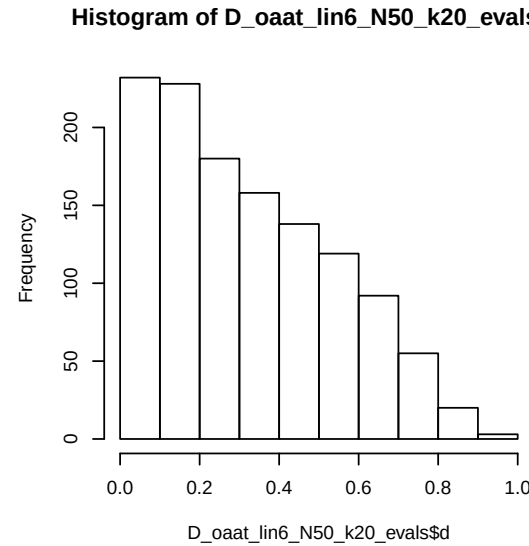


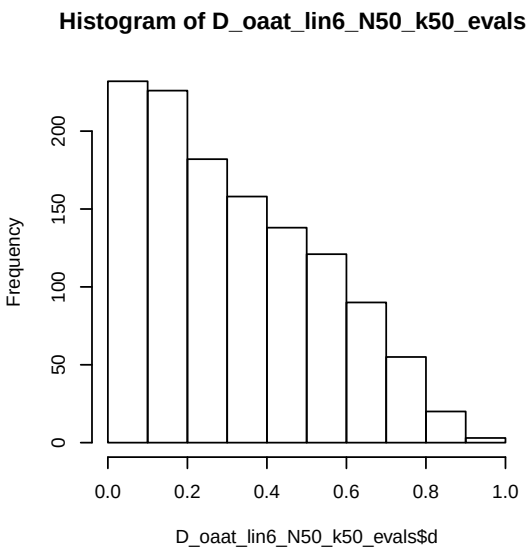


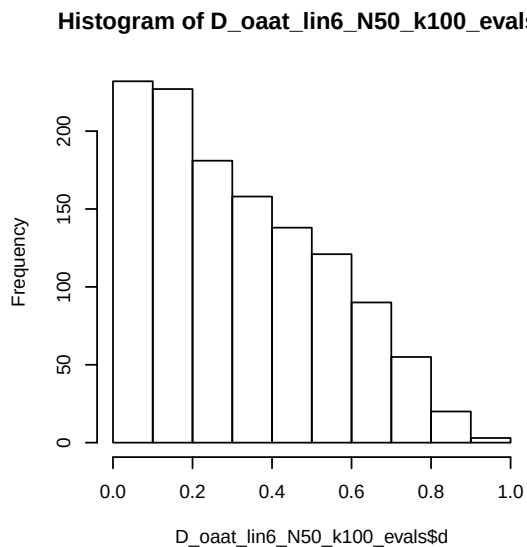
Pairwise distances of design points

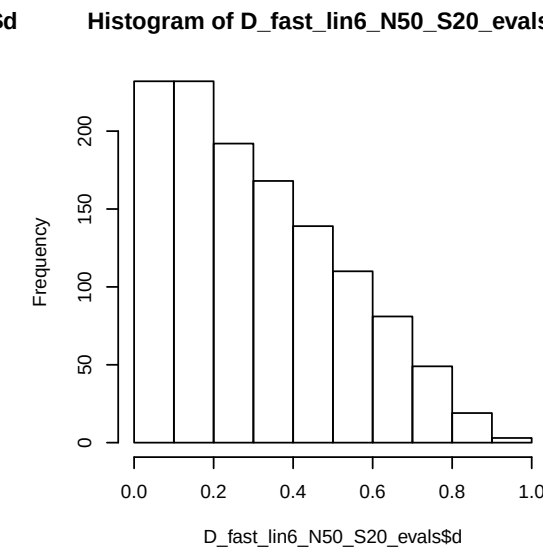




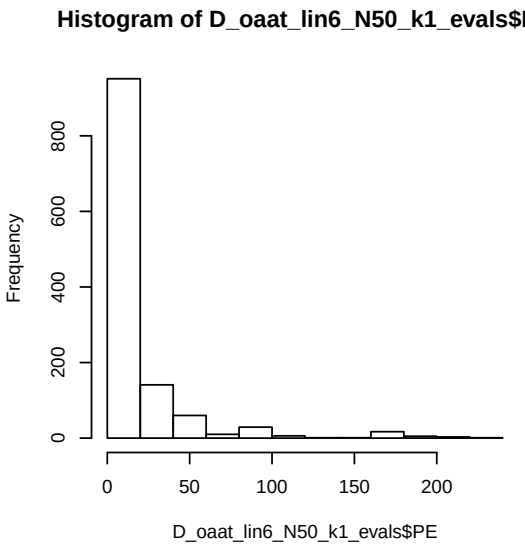


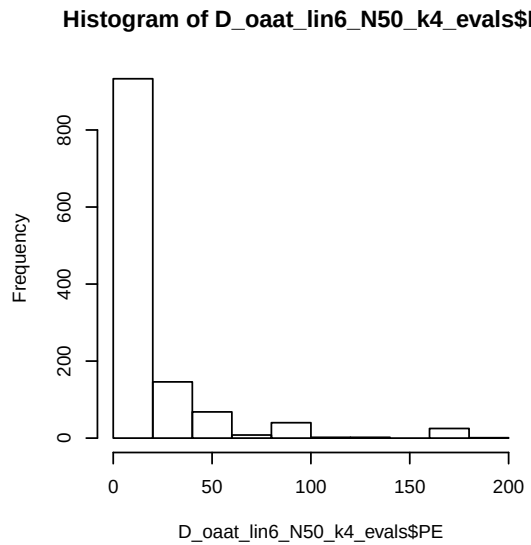


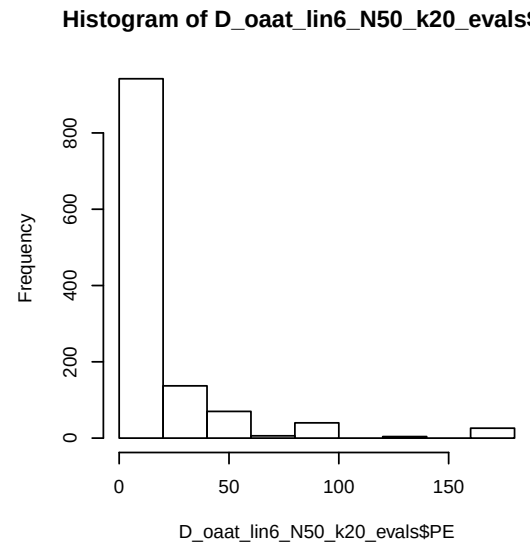


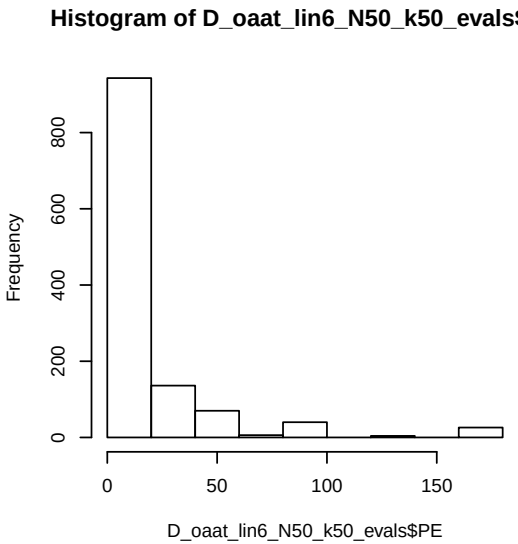


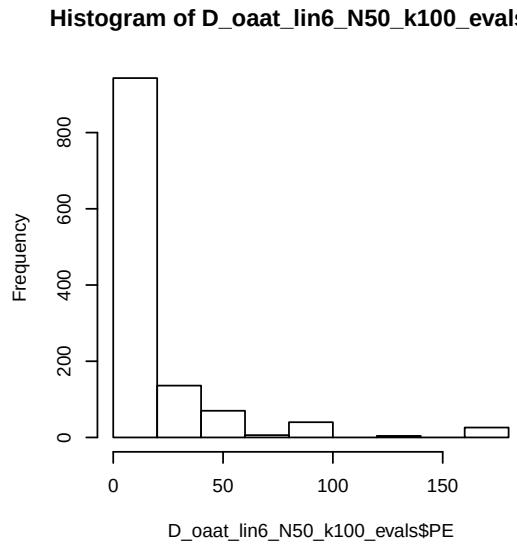
Pairwise potential energies of design points

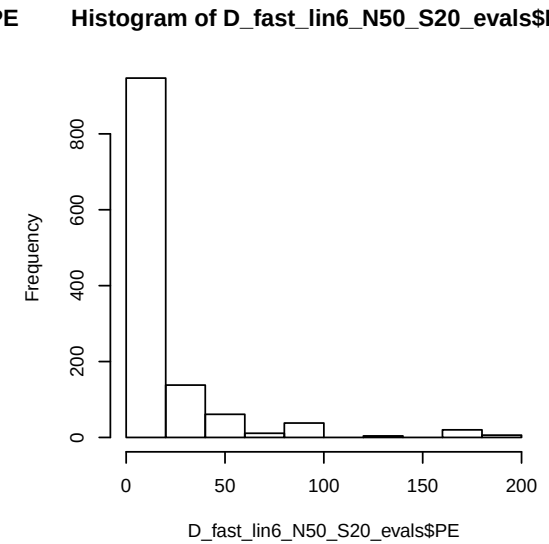








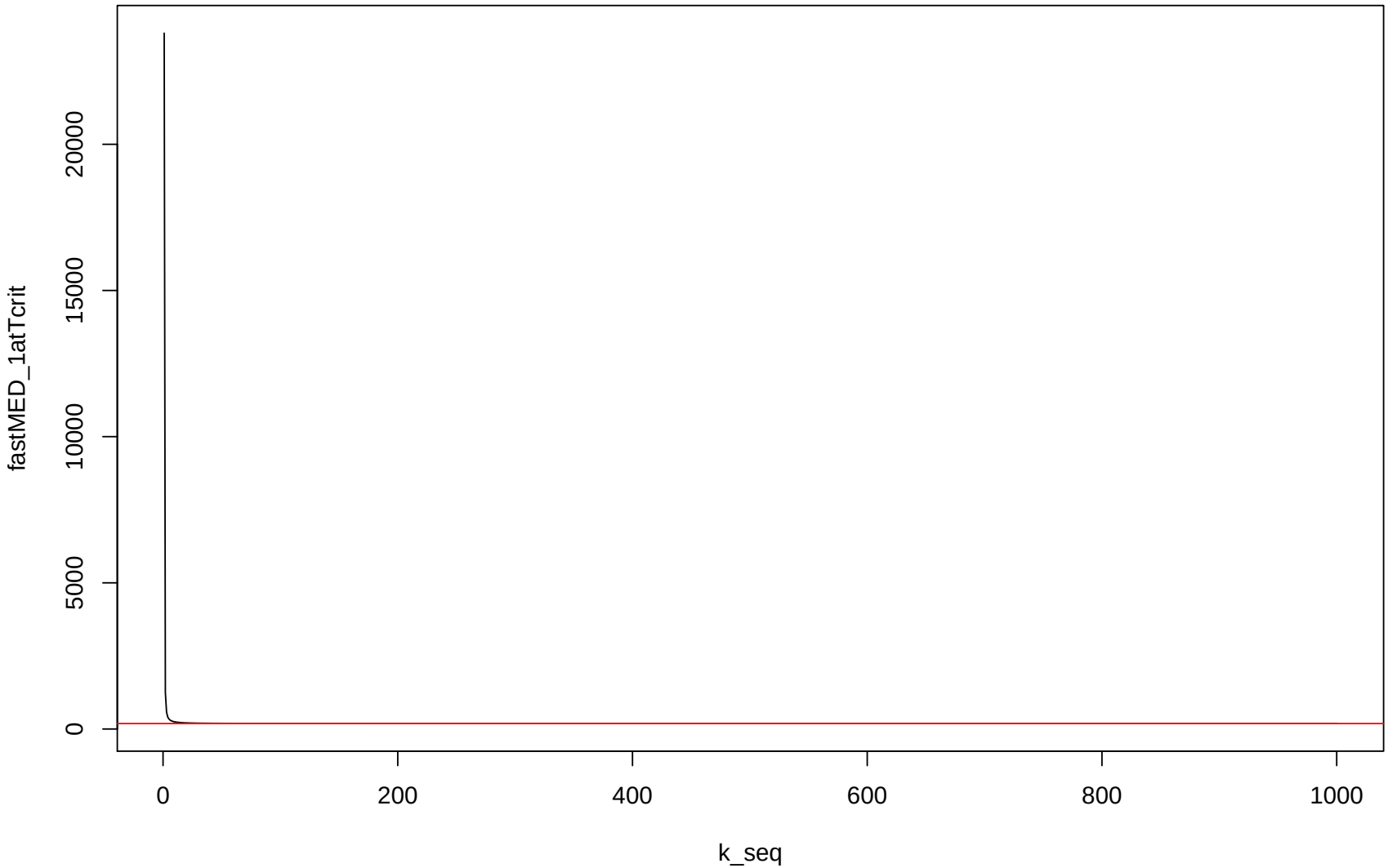




Comparing Evaluations for each N = 50 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	23.673	24.021	23.902	23.888	23.884	23.803
Fast	226.43	180.72	177.07	176.99	176.97	186.59
1atT(k=4)	426.78	414.73	409.09	408.43	408.23	413.16
Mean(D)	0.49045	0.49371	0.5053	0.4947	0.5053	0.49669
sd(D)	0.26054	0.27526	0.27563	0.27547	0.27544	0.26875

Fast MED Evaluated at One-at-a-Time Criterion

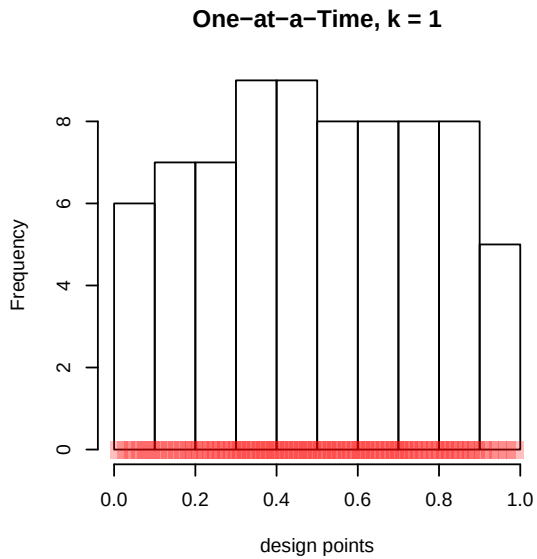


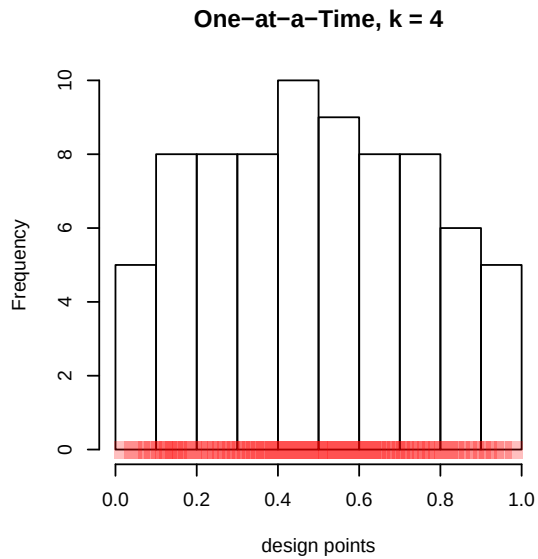

```
## [1] "Fast Criterion :  186.591526705804"

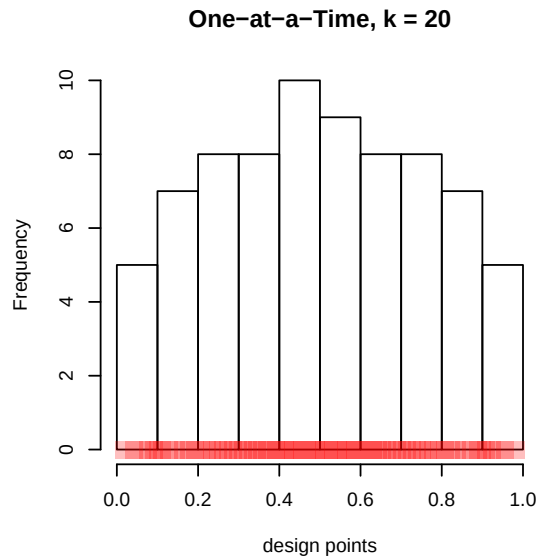
## [1] "One-at-a-Time Criterion at max k :  186.593304308173"

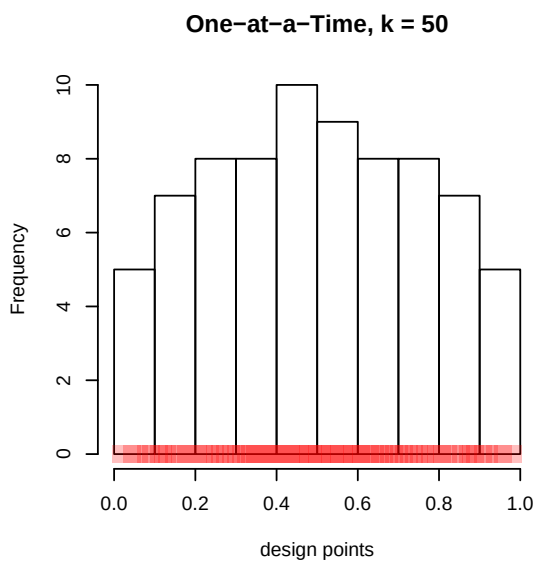
## Warning in calculateEvals(D_oaat_lin6_N75_k1, N, mean_beta0, mean_beta1, :
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

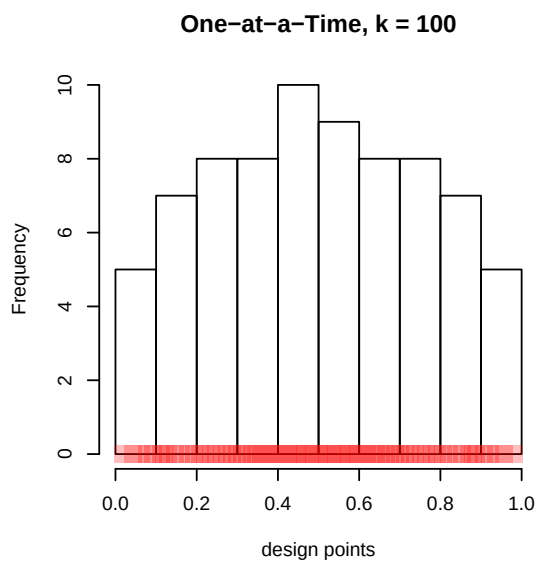
Designs, N = 75

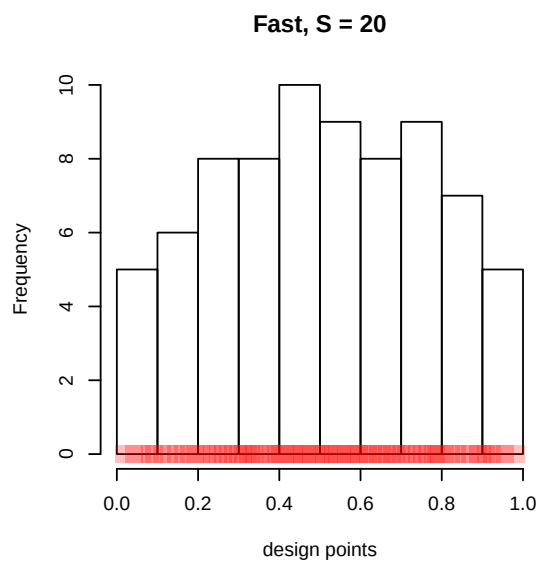

One−at−a−Time, k = 1
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
design points


One−at−a−Time, k = 4
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

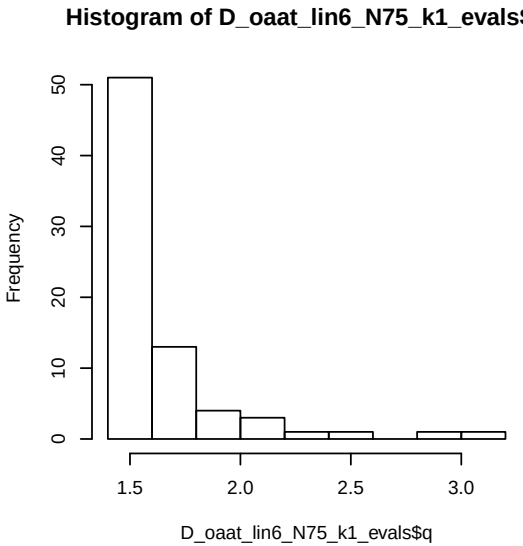

One−at−a−Time, k = 20
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

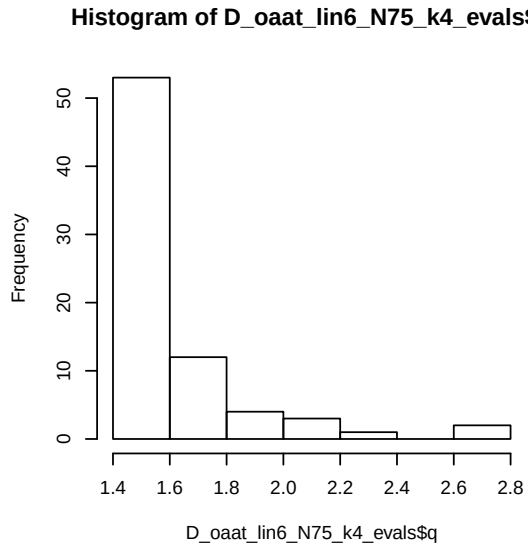

One−at−a−Time, k = 50
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

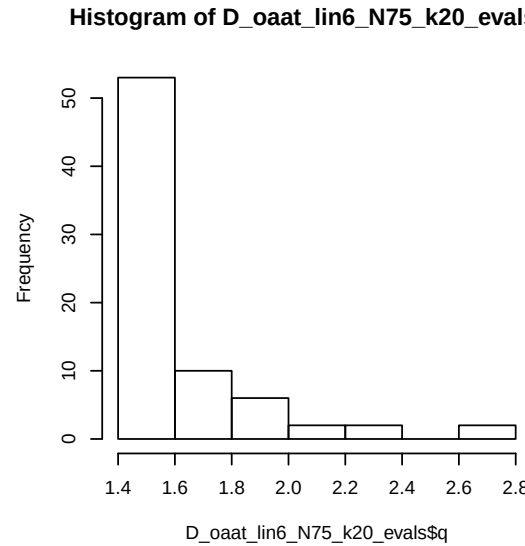

One−at−a−Time, k = 100
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

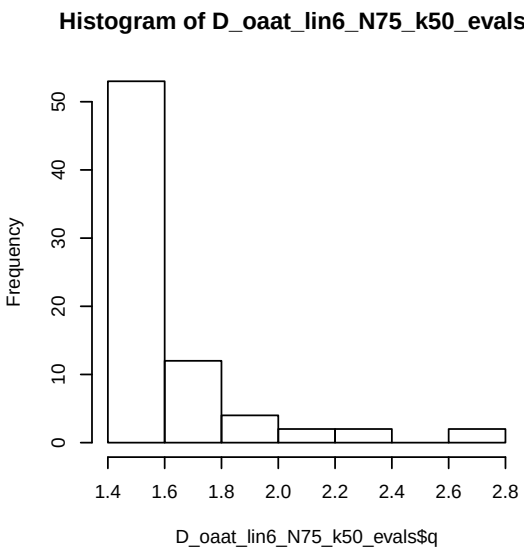

Fast, S = 20
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
design points

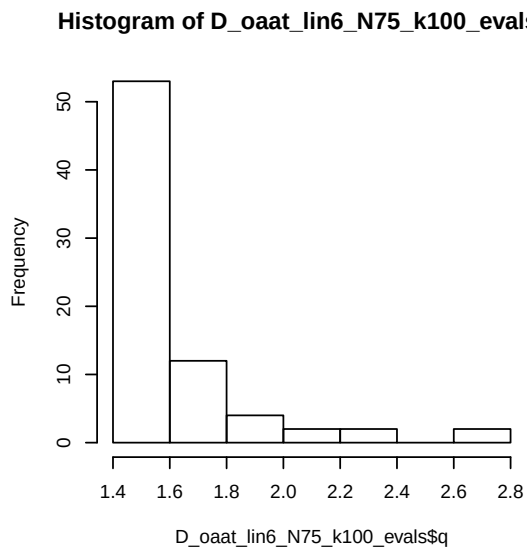
Evaluations of q(.)

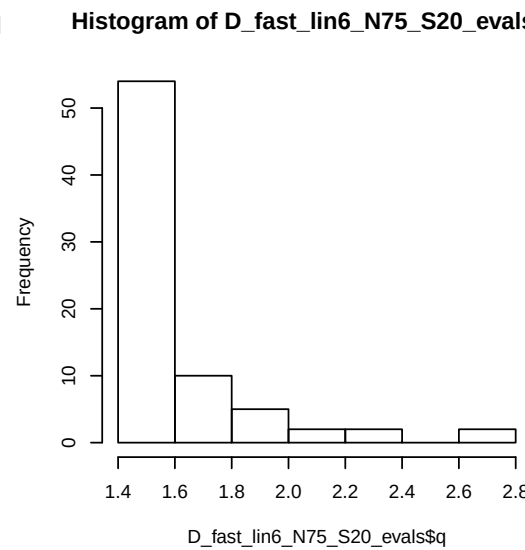




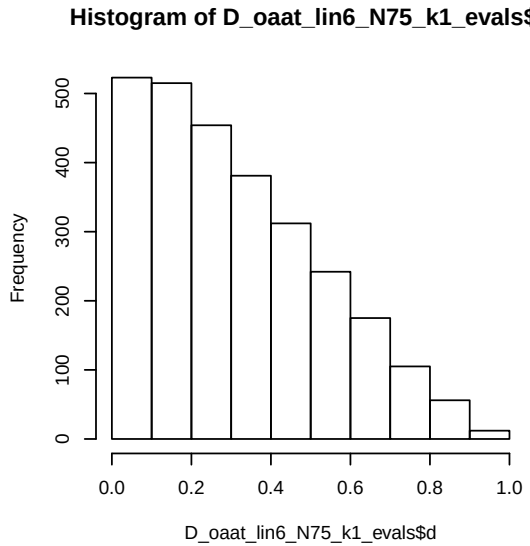


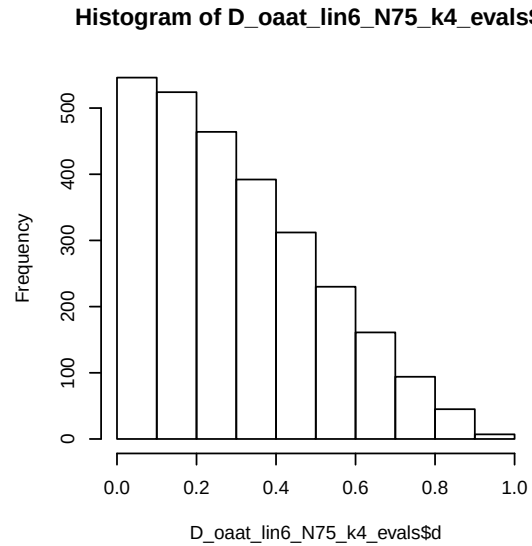


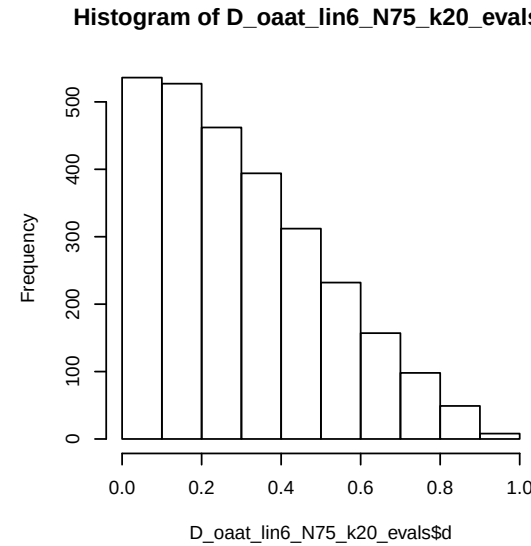


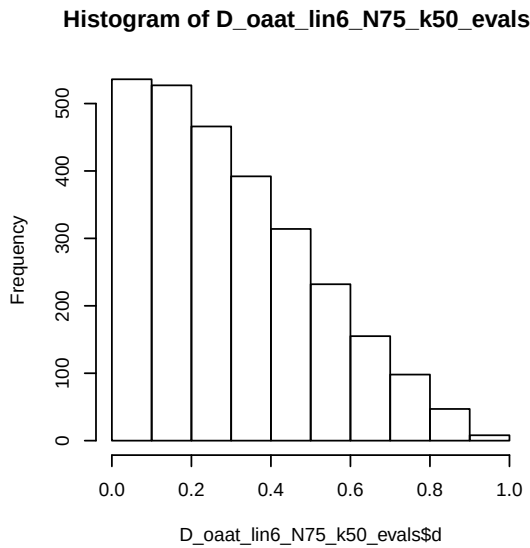


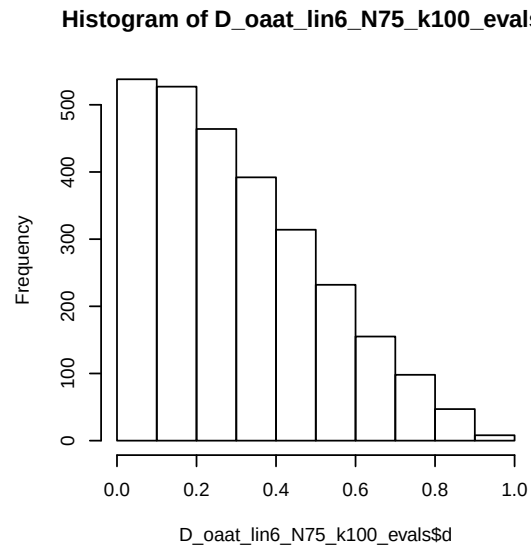
Pairwise distances of design points

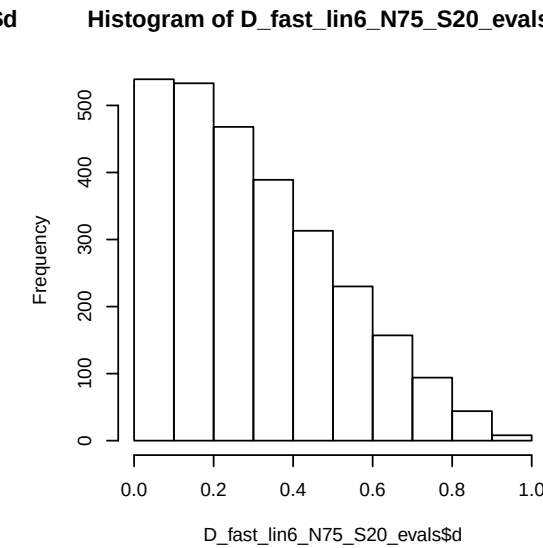




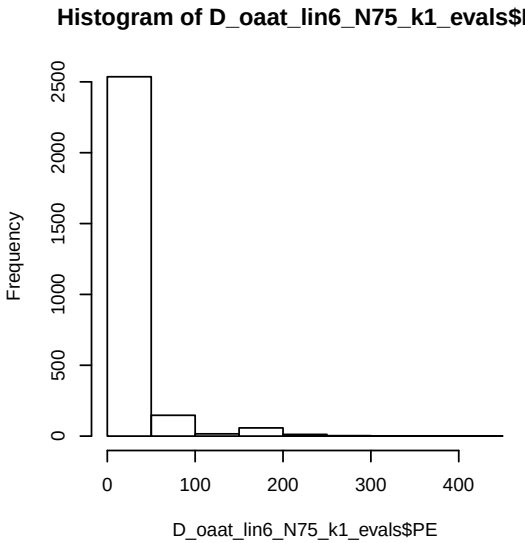


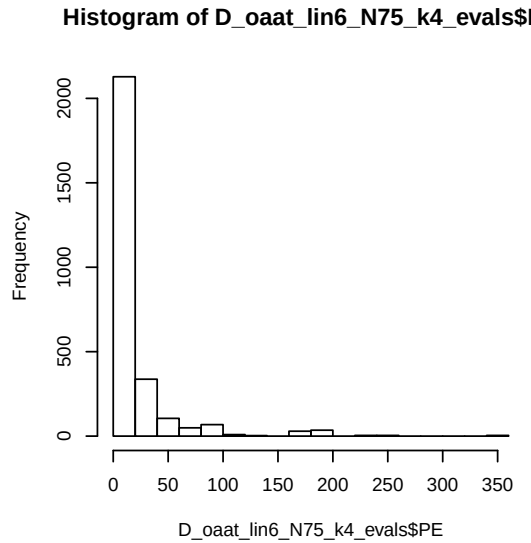


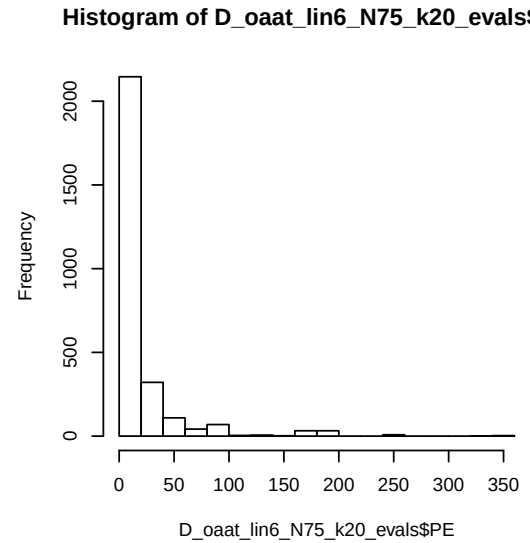


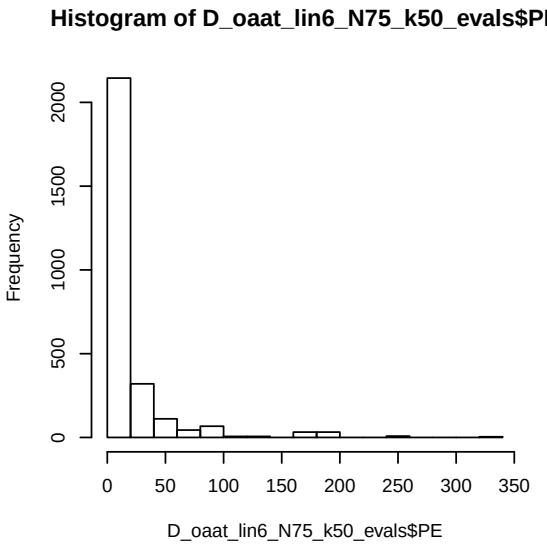


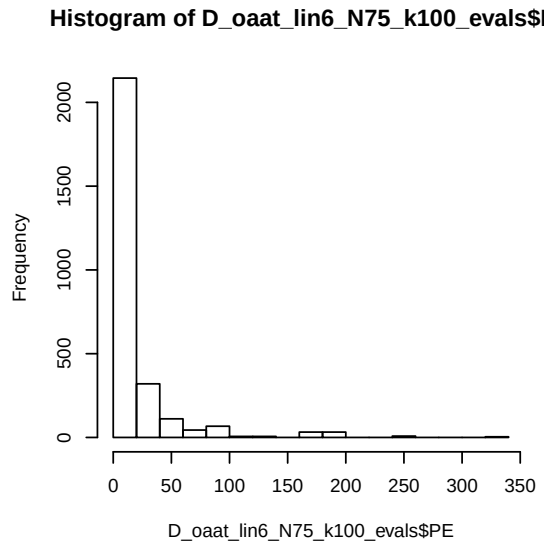
Pairwise potential energies of design points

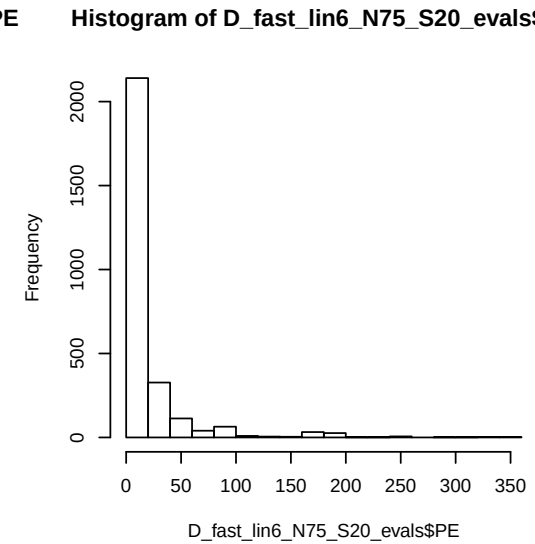








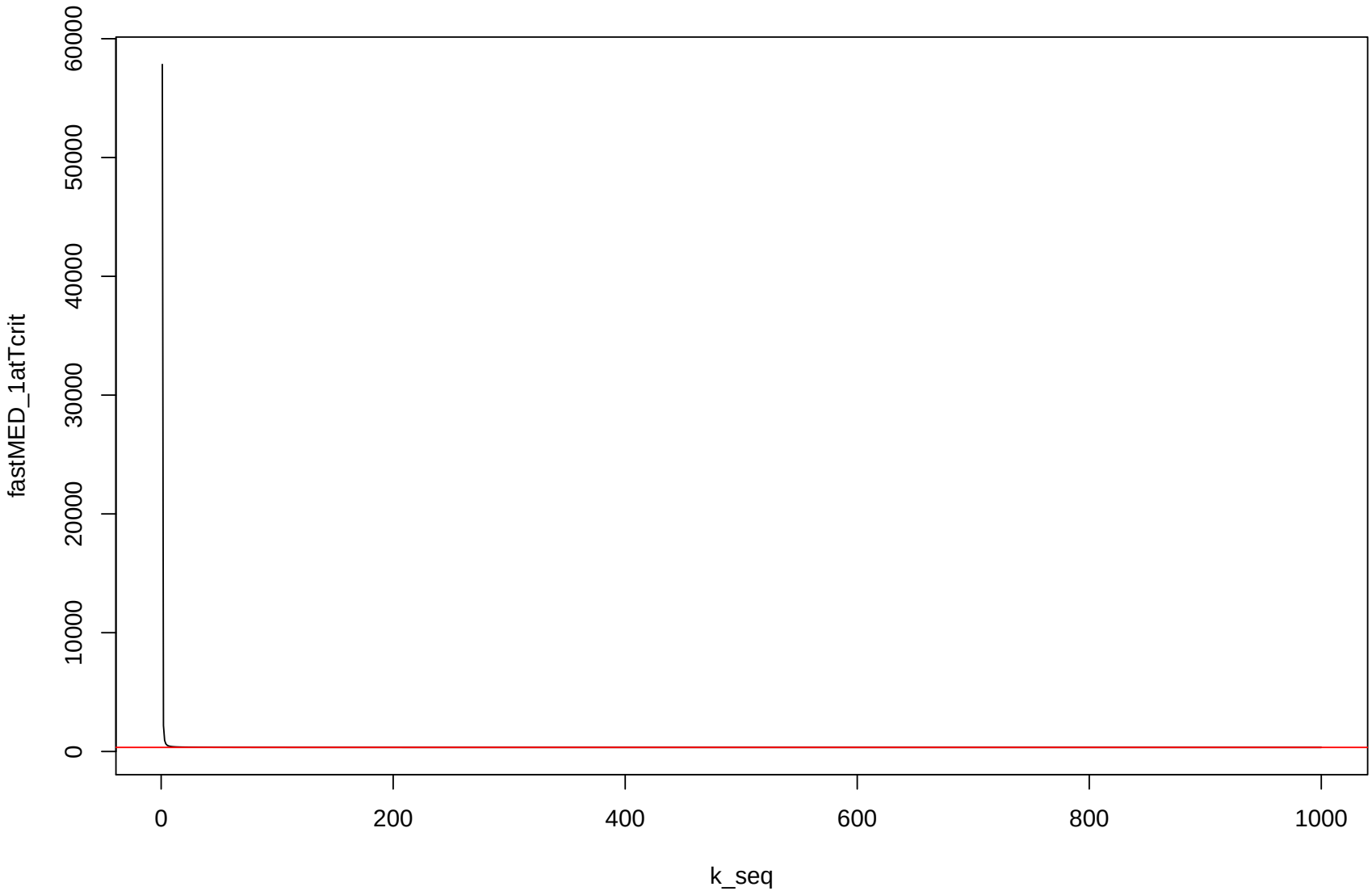




Comparing Evaluations for each N = 75 Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE x10e-3	57.335	57.565	57.528	57.483	57.485	57.841
Fast	424.36	348.11	341.87	339.98	339.98	344.89
1atT(k=4)	641.68	632.38	632.58	631.56	631.58	651.87
Mean(D)	0.49943	0.4895	0.49999	0.5	0.5	0.50883
sd(D)	0.2703	0.26168	0.26357	0.26268	0.26265	0.26129

Fast MED Evaluated at One-at-a-Time Criterion

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## [1] "Fast Criterion :  344.892996988244"

## [1] "One-at-a-Time Criterion at max k :  344.922205119827"
```