The Digital Array Response Curve

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1 The Digital PCR Assay

DNA quantitation in the Digital Array is based on the partitioning of a TaqMan PCR reaction into an array of 765 compartments or wells. If there are only a few template molecules in the sample, most of the wells capture either one or no molecules, and the number of positive wells at the PCR end-point gives a count of the molecules in the sample, to a close approximation. If the number of molecules is not small compared to the number of wells, many wells capture more than one template copy, and the positive well count is significantly less than the number of molecules. Unless the array is fully saturated, template abundance can still be estimated based on the statistical relationship between the number of molecules and the expected number of positive wells. Here, we show how to compute this dose-response curve and put error bars on the readout.

2 Binomial Approximation

Exact calculation of the digital PCR response curve is mathematically non-trivial and computationally expensive. Before giving an algorithm for the exact solution, we here derive an approximate, closed-form solution which turns out to give quite accurate results for the case of a 765-well array. This simple formula allows the curve to be recomputed quickly if the total number of wells changes, for example because certain wells have to be excluded owing to chip defects. Consider the general case of m template molecules randomly distributed within n wells. The probability of any given molecule being trapped in any given well is 1/n, so the probability, p, of a given well capturing at least one molecule is as follows:

$$p = 1 - \left(1 - \frac{1}{n}\right)^m \tag{1}$$

If we assume that the positive/negative status of every well represents the outcome of an independent trial with probability p of success, then the number of positive wells, k, is a binomial random variable with parameters (n, p) and expectation np. The relation between the expected value of k and the number of molecules in the array is therefore:

$$E(k) = n \left[1 - \left(1 - \frac{1}{n} \right)^m \right] \tag{2}$$

We are more interested in estimating m, the number of molecules, from k, the readout of positive wells. We can rearrange (2) to get such an estimate:

$$m = \frac{\log\left(1 - \frac{k}{n}\right)}{\log\left(1 - \frac{1}{n}\right)} \tag{3}$$

Although this equation gives us a useful estimator for m, it does not represent an exact solution for the expectation value for m given k, E[m]. In the first place, k is not a true binomial random variable, since the probability of any given well capturing at least one molecule depends on the events in the other wells. Also, while E[m] is determined for m, the relation between k and E[m] involves the prior probability distribution for m, p(m).

3 Bayesian Logic and Statistical Measures

If we assume a uniform probability distribution for m over a finite range, 1 to N, then p(m) is 1/N for all m within that range. Substituting gives us the following equality:

$$p(m|k) = \frac{p(k|m)/N}{\sum_{i=1}^{N} p(k|i)/N} = \frac{p(k|m)}{\sum_{i=1}^{N} p(k|i)}$$
(4)

Thus, given a table of p(k|m) values, we can readily compute a table of p(m|k) values: for every pair m and k, we divide p(k|m) by the sum of p(k|i) for i = 1 to N. This sum converges for large N, i.e. the result becomes independent of the choice of N. For any given k, E[m] is the weighted average obtained by summing the product of each m value by the corresponding p(m|k) entry. Confidence intervals on E[m] can be derived by building a cumulative distribution function table from the p(m|k) table. Another useful uncertainty metric, the coefficient of variance (CV), is calculated as follows:

$$CV = \frac{\sqrt{E[m^2] - E[m]^2}}{E[m]} \tag{5}$$

Appendix 1 gives a MATLAB implementation of the response curve algorithm. The program output is a table which lists for each value of k the expectation value for m, the CV of the estimate, and lower and upper confidence bounds (LCB and UCB) on the 95% confidence interval. The estimate of m obtained using equation (3) is also included in the output (BA). A complete table for the Digital Array case (n = 765) is given in Appendix 2, calculated using m values up to 4000. The abbreviated data in Table 1 show the statistical trend.

Figure 1 plots E[m] against k from the computed table. The 95% confidence interval for the estimated copy number is also indicated. Note that the expectation value and upper confidence limit curves begin to plateau around $k \simeq 755$ owing to the arbitrary bound at m = 4000 used in the calculation.

4 Probability Mass Function

The exact, rigorous solution to the probability mass function - and an efficient implementation in a computer algorithm in MATLAB code - is given in Appendix 1. Therein, the derived closed form for the p(k|m) distribution which is pre-requisite to the derivation of p(m|k) is

$$p(k|m, N) = \frac{\Omega(k|m, N)}{\sum_{i=1}^{N} \Omega(i|m, N)}$$

The function $\Omega(k|m, N)$, that is the multiplicity of molecular assignment outcomes given that exactly k wells are occupied by m molecules out of N available wells is shown to be expressable in two distinct, however equivalent, forms:

$$\frac{N!}{(N-k)!} \sum_{j=1}^{k} \frac{(-1)^{j+k} j^m}{(k-j)! j!} = \frac{N! (N+\Delta)^m}{2\pi (N-k)!} \int_{-\pi}^{\pi} d\theta \frac{e^{im\theta}}{\prod_{l=1}^{k} ((N+\Delta)e^{i\theta} - l)}$$
(6)

Here, Δ is an arbitrary positive number, the choice of which does not have an effect on the theoretical outcome of the expression but which may affect its numerical stability when the expression is evaluated on a real machine with round-off error. The first of the expressions on the line above follows from the transformation of the problem into a linear inversion problem. The second expression follows from the first, but uses rudimentary complex analysis to transform the discrete math problem into one of continuous fields. This transformation is shown to be far more computationally tractable because of its avoidance of very large numbers, an obstacle evidenced by the appearance of j^m in the first's summand.

5 Technical Noise and Dynamic Noise

The response curve table shows that the statistical uncertainty in the digital PCR readout rises slowly as k increases, with the CV reaching 5% and the 95% confidence range with $\pm 10\%$ of the expectation value at k=715, which corresponds to $m \simeq 2100$ copies. (The uncertainty metrics start to decrease around k=755, reflecting the upper bound on m.) The estimate for m derived from the binomial approximation is close to the expectation value over this range: again, there is an upward trend in the difference between estimates with increasing k, but it remains below 0.5% at k=715. In conclusion, the analysis shows that the 765-well Digital Array has a quantitative dynamic range of at least 1-2000 copies, with an intrinsic statistical uncertainty in the copy number readout of 3-5% over this range. Non-statistical factors, particularly uncertainty in the well calls, may significantly reduce measurement precision for some assays — especially at the high end of the readout range where the response curve is steep. For any specific assay, a true estimate of precision should therefore include an evaluation of well intensity histograms and/or replicate measurements on standards.

Appendix 1

We present here an exact solution to the general problem of the response curve, complete with its conversion to a practicable solution using complex analysis. The end result is presented in short form at the end of this section under the title "Implementation in an Algorithm".

Brute Force by Linear Inversion

For at most n wells to fill, and exactly m molecules to fill them, there are n^m ways of filling them when we do so without regard for what number, or which wells in particular, are empty. Once we move further into concerning ourselves with only those outcomes for which exactly k wells have at least 1 molecule, we must define the multiplicities $\Omega(k|m,n)$, which we will define as the number of distinguishable outcomes, with each molecule being assigned one well, for which, given n available wells, exactly k are occupied. Following from above ...

$$n^{m} = \sum_{i=1}^{n} \binom{n}{i} \Omega(k=i|m,n)$$

In matrix form, then, for some arbitrary number of cases of n from 1 to (capital) $N \dots$

$$\begin{pmatrix} 1^m \\ 2^m \\ \vdots \\ N^m \end{pmatrix}$$

$$= \begin{pmatrix} \begin{pmatrix} 1 \\ 1 \end{pmatrix} & 0 & \cdots & 0 \\ \vdots & & \vdots \\ \begin{pmatrix} N-1 \\ 1 \end{pmatrix} & \begin{pmatrix} N-1 \\ 2 \end{pmatrix} & \cdots & 0 \\ \begin{pmatrix} N \\ 1 \end{pmatrix} & \begin{pmatrix} N \\ 2 \end{pmatrix} & \cdots & \begin{pmatrix} N \\ N \end{pmatrix} \end{pmatrix}$$

$$\times \begin{pmatrix} \Omega(k=1|m,n=1) \\ \Omega(k=2|m,n=2) \\ \vdots \\ \Omega(k=n|m,n=N) \end{pmatrix}$$

So a lower-triangular matrix of rank N defines the N interrelations. Let us label the above $N \times N$ matrix $\tilde{\mathbf{M}}$. Because the matrix is non-singular and invertible . . .

$$\begin{pmatrix} \Omega(k=1|m,n=1) \\ \Omega(k=2|m,n=2) \\ \vdots \\ \Omega(k=n|m,n=N) \end{pmatrix} = \tilde{\mathbf{M}}^{-1} \begin{pmatrix} 1^m \\ 2^m \\ \vdots \\ N^m \end{pmatrix}$$

However, as it turns out, the inversion of $\tilde{\mathbf{M}}$ by Gauss-Jordan Elimination is relatively simple. It can be shown that for the i^{th} row and j^{th} column,

$$\tilde{\mathbf{M}}_{ij}^{-1} = \tilde{\mathbf{M}}_{ij}(-1)^{i+j}$$

However, we're not done yet, because each element of the Ω vector is presently restricted to its own "scope", that is, it sees only n wells and finds all the possibilities as a function of that number n. Therefore, we must transform this basis into that in which the operator accounts for an arbitrary number of wells, N. This transformation will take the form of a simple diagonal matrix defining the number of ways we can choose the scope defined in each entry of the vector, given the N wells available to choose from. This will give us the expression ...

$$\begin{pmatrix} \Omega(k=1|m,N) \\ \Omega(k=2|m,N) \\ \vdots \\ \Omega(k=n|m,N) \end{pmatrix}$$

$$= \begin{pmatrix} \binom{N}{1} & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \binom{N}{N} \end{pmatrix} \begin{pmatrix} \Omega(k=1|m,n=1) \\ \Omega(k=2|m,n=2) \\ \vdots \\ \Omega(k=n|m,n=N) \end{pmatrix}$$

$$= \begin{pmatrix} \binom{N}{1} & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \binom{N}{N} \end{pmatrix}$$

$$= \begin{pmatrix} \binom{1}{1} & (-1)^{1+1} & 0 & \cdots & 0 \\ 0 & 0 & \binom{N}{N} & 0 \end{pmatrix}$$

$$\times \begin{pmatrix} \binom{1}{1} & (-1)^{1+1} & 0 & \cdots & 0 \\ \vdots & \ddots & 0 & 0 \\ (N-1) & (-1)^{N+1-1} & \binom{N-1}{2} & (-1)^{N+1} & \ddots & 0 \\ \binom{N}{1} & (-1)^{N+1} & \binom{N}{2} & (-1)^{N+2} & \cdots & \binom{N}{N} & (-1)^{N+N} \end{pmatrix} \begin{pmatrix} 1^m \\ 2^m \\ \vdots \\ N^m \end{pmatrix}$$
The closed form of this solution is then

The closed form of this solution is then

$$\Omega(k|m,N) = \frac{N!}{(N-k)!} \sum_{j=1}^{k} \frac{(-1)^{j+k} j^m}{(k-j)! j!}$$
 (7)

while the sought-after probability p(k|m, N) is then

$$p(k|m, N) = \frac{\Omega(k|m, N)}{\sum_{i} \Omega(i|m, N)}$$

Using Complex Analysis to Simplify the General Expression

We begin with the previously derived expression for $\Omega(k|m,N)$...

$$\frac{N!}{(N-k)!} \sum_{j=1}^{k} \frac{(-1)^{j+k} j^m}{(k-j)! j!}$$

and assert that there exists some function f(j) such that for $j \in$ the complex plane, where a countable set of poles exist at $j = \{1 \dots k\}$ and corresponding residues evaluated at these points j

$$Res(f(j)) = \left\{ \frac{(-1)^{j+k} j^m}{(k-j)! j!} \right\}$$

then the function f(j) may take the form

$$f(j) = \frac{(-1)^{j+k} j^m}{(k-j)! j!} \cdot \frac{g(j)}{\prod_{l=1}^k (j-l)}$$

where g(j) is some other function with the property

$$\lim_{j \to j_0 \in \{1...k\}} \frac{g(j)}{\prod_{l=1}^k (j-l)} = \frac{1}{j-j_0}$$

where g(j) is analytic for all other $j \notin \{1 \dots k\}$. Then

$$g(1) = (-1)(-2)(-3)\dots(1-k) = (k-1)!(-1)^{k-1}$$

$$g(2) = (1)(-1)(-2)\dots(2-k) = (k-2)!(1!)(-1)^{k-2}$$

$$\vdots$$

$$g(j) = (1)(2)\dots(j-1)(k-j)(k-j-1)\dots(2)(1)(-1)^{k-j}$$

$$\vdots$$

$$g(k) = (1)(2)\dots(j-1)$$

From which we infer that for in the neighborhood of the integral values $j \in \{1 \dots k\}$

$$g(j) = (-1)^{k-j}(k-j)!(j-1)!$$

SO

$$f(j) = \frac{(-1)^{j+k} j^m}{(k-j)! j!} \cdot \frac{(-1)^{k-j} (k-j)! (j-1)!}{\prod_{l=1}^k (j-l)}$$
$$= \frac{j^{m-1}}{\prod_{l=1}^k (j-l)}$$

then, going back to the original problem

$$\Omega(k|m,N) = \frac{N!}{2\pi i(N-k)!} \oint_{S} f(j)dj$$

where the set $j \in \{1 \dots k\} \subset S$. We can then choose to parametrize $j = (N + \Delta)e^{i\theta}$. Here, Δ is an arbitrary positive number intended to ensure that the bounding one-dimensional surface over which the above is integrated encompasses all $j \in \{1 \dots k\}$. Performing this transformation of coordinates on the integral, we get

$$\Omega(k|m,N) = \frac{N!(N+\Delta)^m}{2\pi(N-k)!} \int_{-\pi}^{\pi} d\theta \frac{e^{im\theta}}{\prod_{l=1}^{k} ((N+\Delta)e^{i\theta} - l)}$$
(8)

Implementation in an Algorithm

Though the problem is now solved, the above integral is still difficult computationally if attacked head-on. However, we have now defined each p(k|m, N) as a unique field over θ , with the fields $h = h(\theta, k)$ of consecutive k's having a very simple interrelation:

$$\frac{h(\theta,k)}{h(\theta,k-1)} = \frac{N-k+1}{(N+\Delta)e^{i\theta}-k} \tag{9}$$

with $\theta = [-\pi, \pi)$. We may initialize this recursion relation with

$$h(\theta, k = 1) = \frac{e^{im\theta}}{(N + \Delta)e^{i\theta} - 1}$$

where we have excluded the cancelling term, $N(N+\Delta)^m/2\pi$ which is independent of both θ and k. And so

$$p(k|m,N) = \frac{\int_{-\pi}^{\pi} d\theta \cdot h(\theta,k)}{\int_{-\pi}^{\pi} d\theta \sum_{l=1}^{N} h(\theta,l)}$$
(10)

Now we're ready to crunch the numbers on a desktop machine. The following MATLAB algorithm will output two matrices

pkm_arr

and

pmk_arr

The former will have rows whose index defines a given number of molecules m, its columns having indices which denote the number of positive wells k, and the corresponding element to the m^{th} row and k^{th} column will have the value of p(k|m). Similarly, the latter's k^{th} row and m^{th} column will correspond to an entry whose value is p(m|k).

```
clc; clear all;
N=765; %input
m_max=4000; %input

pkm_arr = zeros(m_max,N);
pmk_arr = pkm_arr';
```

"Set resolve to degree of fineness needed for integration: the contour will become a polygon of as many sides."

```
resolve = 1e4;
th_arr = linspace(-pi,pi,resolve);
th_arr = th_arr(1:(resolve-1));
"The number below needs only be greater than N. Varying it should not
%change the end result (as per the Cauchy Integral Theorem)
d = N+3;
for(m=1:m_max)
    f=1; %initialize
    omega = [];
    for(k=1:N)
        if(m<k)
            break;
        end;
        a = (N-k+1)./(d*exp(i*th_arr)-k);
        f = f.*a;
        omega = [omega sum(f.*exp(i*m*th_arr))];
    end;
    omega = real(omega);
    pkm = omega/sum(omega);
    pkm = [pkm zeros(1,(N-length(pkm)))];
    pkm_arr(m,:) = pkm;
    clc;
end;
\% assigning "significant digits" to the 6th decimal place
pkm_arr = abs((1e-6)*round(1e6 * pkm_arr));
for(count=1:N)
    pmk_arr(count,:) = pkm_arr(:,count)/sum(pkm_arr(:,count));
end;
   This code can then be appended to calculate the relevant statistical measures discussed
earlier:
vals = 1:4000;
cv = [];
ave = [];
lcb = [];
ucb = [];
ba = [];
for(count = 1:765);
```

```
cv = [cv sqrt(abs(sum(pmk_arr(count,:).*(vals).^2)
      - (sum(pmk_arr(count,:).*(vals)))^2))/(sum(pmk_arr(count,:).*(vals)))]; % CV
    ave = [ave sum(pmk_arr(count,:).*vals)]; % E(m)
   ba = [ba (\log(1 - (count/765))/\log(1 - 1/765))]; % Binomial approximation
    cudf = [];
    for(count2 = 1:4000)
        cudf = [cudf sum(pmk_arr(count,(1:count2)))];
    end;
    indl = find(cudf>0.025);
    if(indl(1) == 1)
        l = indl(1);
    else
        1 = indl(1)-1;
    end;
    indu = find(cudf<0.975);
    if(length(indu) == 0)
        u = 1;
    elseif(indu(length(indu))==4000)
        u = indu(length(indu));
        u = indu(length(indu))+1;
    end;
    lcb = [lcb 1];
    ucb = [ucb u];
end;
```

Appendix 2

Table 1: Statistical measures of a digital array with N=765 and $1 \le m \le 4000$

k	BA	E(m)	CV	LCB	UCB
1	1	1	0.04	1	1
2	2	2	0.03	1	2
3	3	3.01	0.03	2	3
4	4.01	4.01	0.03	3	4
5	5.01	5.02	0.03	4	5
6	6.02	6.03	0.03	5	7
7	7.03	7.04	0.03	6	8
8	8.04	8.05	0.03	7	9
9	9.05	9.06	0.03	8	10
10	10.06	10.07	0.03	9	11
11	11.07	11.09	0.03	10	12
12	12.09	12.1	0.03	11	13
13	13.1	13.12	0.03	12	14
14	14.12	14.14	0.03	13	15
15	15.14	15.16	0.03	14	16
16	16.16	16.18	0.03	15	17
17	17.18	17.2	0.03	16	18
18	18.2	18.23	0.03	17	19
19	19.23	19.25	0.03	18	21
20	20.25	20.28	0.03	19	22
21	21.28	21.31	0.03	20	23
22	22.31	22.34	0.03	21	24
23	23.34	23.37	0.03	22	25
24	24.37	24.4	0.03	23	26
25	25.4	25.43	0.03	24	27
26	26.43	26.47	0.03	25	28
27	27.47	27.51	0.03	26	29
28	28.51	28.54	0.03	27	30
29	29.54	29.58	0.03	28	31
30	30.58	30.62	0.03	29	33
31	31.62	31.67	0.03	30	34
32	32.67	32.71	0.03	31	35
33	33.71	33.76	0.03	32	36
34	34.76	34.8	0.03	33	37
35	35.8	35.85	0.03	34	38
36	36.85	36.9	0.03	35	39
37	37.9	37.95	0.03	36	40
38	38.95	39	0.03	37	41
39	40	40.06	0.03	38	42
40	41.06	41.11	0.03	39	44

k	BA	E(m)	CV	LCB	UCB
41	42.11	42.17	0.03	40	45
42	43.17	43.23	0.03	41	46
43	44.23	44.29	0.03	42	47
44	45.29	45.35	0.03	43	48
45	46.35	46.41	0.03	44	49
46	47.41	47.47	0.03	45	50
47	48.47	48.54	0.03	46	51
48	49.54	49.61	0.03	47	53
49	50.61	50.67	0.03	48	54
50	51.68	51.74	0.03	49	55
51	52.75	52.82	0.03	50	56
52	53.82	53.89	0.03	51	57
53	54.89	54.96	0.03	52	58
54	55.96	56.04	0.03	53	59
55	57.04	57.12	0.03	54	60
56	58.12	58.2	0.03	55	62
57	59.2	59.28	0.03	56	63
58	60.28	60.36	0.03	57	64
59	61.36	61.44	0.03	58	65
60	62.44	62.53	0.03	59	66
61	63.53	63.61	0.03	60	67
62	64.61	64.7	0.03	61	68
63	65.7	65.79	0.03	62	70
64	66.79	66.88	0.03	63	71
65	67.88	67.98	0.03	64	72
66	68.98	69.07	0.03	65	73
67	70.07	70.17	0.03	66	74
68	71.17	71.26	0.03	67	75
69	72.27	72.36	0.03	68	77
70	73.36	73.46	0.03	69	78
71	74.47	74.57	0.03	70	79
72	75.57	75.67	0.03	71	80
73	76.67	76.77	0.03	72	81
74	77.78	77.88	0.03	74	82
75	78.88	78.99	0.03	75	84
76	79.99	80.1	0.03	76	85
77	81.1	81.21	0.03	77	86
78	82.22	82.33	0.03	78	87
79	83.33	83.44	0.03	79	88
80	84.44	84.56	0.03	80	89

k	BA	E(m)	CV	LCB	UCB
81	85.56	85.68	0.03	81	91
82	86.68	86.8	0.03	82	92
83	87.8	87.92	0.03	83	93
84	88.92	89.04	0.03	84	94
85	90.05	90.17	0.03	85	95
86	91.17	91.29	0.03	86	96
87	92.3	92.42	0.03	87	98
88	93.43	93.55	0.03	88	99
89	94.56	94.68	0.03	89	100
90	95.69	95.82	0.03	91	101
91	96.82	96.95	0.03	92	102
92	97.96	98.09	0.03	93	104
93	99.09	99.23	0.03	94	105
94	100.23	100.37	0.03	95	106
95	101.37	101.51	0.03	96	107
96	102.51	102.65	0.03	97	108
97	103.66	103.8	0.03	98	110
98	104.8	104.94	0.03	99	111
99	105.95	106.09	0.03	100	112
100	107.1	107.24	0.03	101	113
101	108.25	108.4	0.03	102	114
102	109.4	109.55	0.03	104	116
103	110.55	110.7	0.03	105	117
104	111.71	111.86	0.03	106	118
105	112.87	113.02	0.03	107	119
106	114.03	114.18	0.03	108	121
107	115.19	115.34	0.03	109	122
108	116.35	116.51	0.03	110	123
109	117.52	117.68	0.03	111	124
110	118.68	118.84	0.03	112	126
111	119.85	120.01	0.03	113	127
112	121.02	121.18	0.03	115	128
113	122.19	122.36	0.03	116	129
114	123.36	123.53	0.03	117	130
115	124.54	124.71	0.03	118	132
116	125.72	125.89	0.03	119	133
117	126.9	127.07	0.03	120	134
118	128.08	128.25	0.03	121	135
119	129.26	129.44	0.03	122	137
120	130.44	130.62	0.03	124	138

k BA E(m) CV LCB UCB 121 131.63 131.81 0.03 125 139 122 132.82 133 0.03 126 140 123 134.01 134.19 0.03 127 142 124 135.2 135.38 0.03 129 144 126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 137 153 134 147.22 147.42						
122 132.82 133 0.03 126 140 123 134.01 134.19 0.03 127 142 124 135.2 135.38 0.03 128 143 125 136.39 136.58 0.03 129 144 126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 141 157 136 149.65 149.85 <th>k</th> <th>BA</th> <th>E(m)</th> <th>CV</th> <th>LCB</th> <th>UCB</th>	k	BA	E(m)	CV	LCB	UCB
123 134.01 134.19 0.03 127 142 124 135.2 135.38 0.03 128 143 125 136.39 136.58 0.03 129 144 126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 142 158 137 150.86 151.07 0.03 142 158 137 150.86 151.07<	121	131.63	131.81	0.03	125	139
124 135.2 135.38 0.03 128 143 125 136.39 136.58 0.03 129 144 126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07<	122	132.82	133	0.03	126	140
125 136.39 136.58 0.03 129 144 126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 144 161 139 153.3 153.51<	123	134.01	134.19	0.03	127	142
126 137.59 137.78 0.03 130 145 127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74<	124	135.2	135.38	0.03	128	143
127 138.79 138.98 0.03 131 147 128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 139 156 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 <td>125</td> <td>136.39</td> <td>136.58</td> <td>0.03</td> <td>129</td> <td>144</td>	125	136.39	136.58	0.03	129	144
128 139.98 140.18 0.03 133 148 129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 <td>126</td> <td>137.59</td> <td>137.78</td> <td>0.03</td> <td>130</td> <td>145</td>	126	137.59	137.78	0.03	130	145
129 141.19 141.38 0.03 134 149 130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 140 154.52 154.74 <td>127</td> <td>138.79</td> <td>138.98</td> <td>0.03</td> <td>131</td> <td>147</td>	127	138.79	138.98	0.03	131	147
130 142.39 142.58 0.03 135 151 131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 144 161 139 153.3 153.51 0.03 148 165 140 154.52 154.74 <td>128</td> <td>139.98</td> <td>140.18</td> <td>0.03</td> <td>133</td> <td>148</td>	128	139.98	140.18	0.03	133	148
131 143.59 143.79 0.03 136 152 132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 </td <td>129</td> <td>141.19</td> <td>141.38</td> <td>0.03</td> <td>134</td> <td>149</td>	129	141.19	141.38	0.03	134	149
132 144.8 145 0.03 137 153 133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 </td <td>130</td> <td>142.39</td> <td>142.58</td> <td>0.03</td> <td>135</td> <td>151</td>	130	142.39	142.58	0.03	135	151
133 146.01 146.21 0.03 138 154 134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 155 172 148 164.37 164.	131	143.59	143.79	0.03	136	152
134 147.22 147.42 0.03 139 156 135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 155 172 148 164.37 164.6	132	144.8	145	0.03	137	153
135 148.43 148.64 0.03 141 157 136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.8	133	146.01	146.21	0.03	138	154
136 149.65 149.85 0.03 142 158 137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09	134	147.22	147.42	0.03	139	156
137 150.86 151.07 0.03 143 159 138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09	135	148.43	148.64	0.03	141	157
138 152.08 152.29 0.03 144 161 139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33<	136	149.65	149.85	0.03	142	158
139 153.3 153.51 0.03 145 162 140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 160 179 153 170.59 170.83<	137	150.86	151.07	0.03	143	159
140 154.52 154.74 0.03 146 163 141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 162 180 154 171.84 172.08	138	152.08	152.29	0.03	144	161
141 155.75 155.96 0.03 148 165 142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08	139	153.3	153.51	0.03	145	162
142 156.97 157.19 0.03 149 166 143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34<	140	154.52	154.74	0.03	146	163
143 158.2 158.42 0.03 150 167 144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59<	141	155.75	155.96	0.03	148	165
144 159.43 159.65 0.03 151 169 145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85	142	156.97	157.19	0.03	149	166
145 160.66 160.89 0.03 152 170 146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11	143	158.2	158.42	0.03	150	167
146 161.9 162.12 0.03 153 171 147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37	144	159.43	159.65	0.03	151	169
147 163.13 163.36 0.03 155 172 148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	145	160.66	160.89	0.03	152	170
148 164.37 164.6 0.03 156 174 149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	146	161.9	162.12	0.03	153	171
149 165.61 165.84 0.03 157 175 150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	147	163.13	163.36	0.03	155	172
150 166.85 167.09 0.03 158 176 151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	148	164.37	164.6	0.03	156	174
151 168.1 168.33 0.03 159 178 152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	149	165.61	165.84	0.03	157	175
152 169.35 169.58 0.03 160 179 153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	150	166.85	167.09	0.03	158	176
153 170.59 170.83 0.03 162 180 154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	151	168.1	168.33	0.03	159	178
154 171.84 172.08 0.03 163 182 155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	152	169.35	169.58	0.03	160	179
155 173.1 173.34 0.03 164 183 156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	153	170.59	170.83	0.03	162	180
156 174.35 174.59 0.03 165 184 157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	154	171.84	172.08	0.03	163	182
157 175.61 175.85 0.03 166 186 158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	155	173.1	173.34	0.03	164	183
158 176.86 177.11 0.03 168 187 159 178.13 178.37 0.03 169 188	156	174.35	174.59	0.03	165	184
159 178.13 178.37 0.03 169 188	157	175.61	175.85	0.03	166	186
	158	176.86	177.11	0.03	168	187
160 179.39 179.64 0.03 170 190	159	178.13	178.37	0.03	169	188
	160	179.39	179.64	0.03	170	190

k	BA	E(m)	CV	LCB	UCB
161	180.65	180.9	0.03	171	191
162	181.92	182.17	0.03	172	192
163	183.19	183.44	0.03	174	194
164	184.46	184.72	0.03	175	195
165	185.73	185.99	0.03	176	196
166	187.01	187.27	0.03	177	198
167	188.28	188.55	0.03	178	199
168	189.56	189.83	0.03	180	200
169	190.85	191.11	0.03	181	202
170	192.13	192.4	0.03	182	203
171	193.42	193.69	0.03	183	204
172	194.7	194.98	0.03	184	206
173	195.99	196.27	0.03	186	207
174	197.29	197.56	0.03	187	209
175	198.58	198.86	0.03	188	210
176	199.88	200.16	0.03	189	211
177	201.18	201.46	0.03	191	213
178	202.48	202.76	0.03	192	214
179	203.78	204.07	0.03	193	215
180	205.09	205.38	0.03	194	217
181	206.4	206.69	0.03	196	218
182	207.71	208	0.03	197	220
183	209.02	209.31	0.03	198	221
184	210.33	210.63	0.03	199	222
185	211.65	211.95	0.03	200	224
186	212.97	213.27	0.03	202	225
187	214.29	214.59	0.03	203	227
188	215.61	215.92	0.03	204	228
189	216.94	217.25	0.03	206	229
190	218.27	218.58	0.03	207	231
191	219.6	219.91	0.03	208	232
192	220.93	221.25	0.03	209	234
193	222.27	222.58	0.03	211	235
194	223.61	223.92	0.03	212	236
195	224.95	225.26	0.03	213	238
196	226.29	226.61	0.03	214	239
197	227.63	227.96	0.03	216	241
198	228.98	229.3	0.03	217	242
199	230.33	230.66	0.03	218	244
200	231.68	232.01	0.03	219	245

k	BA	E(m)	CV	LCB	UCB
201	233.04	233.37	0.03	221	246
202	234.39	234.73	0.03	222	248
203	235.75	236.09	0.03	223	249
204	237.11	237.45	0.03	225	251
205	238.48	238.82	0.03	226	252
206	239.84	240.18	0.03	227	254
207	241.21	241.56	0.03	228	255
208	242.58	242.93	0.03	230	256
209	243.96	244.31	0.03	231	258
210	245.33	245.68	0.03	232	259
211	246.71	247.06	0.03	234	261
212	248.09	248.45	0.03	235	262
213	249.48	249.83	0.03	236	264
214	250.86	251.22	0.03	238	265
215	252.25	252.61	0.03	239	267
216	253.64	254.01	0.03	240	268
217	255.04	255.4	0.03	242	270
218	256.43	256.8	0.03	243	271
219	257.83	258.2	0.03	244	273
220	259.23	259.61	0.03	246	274
221	260.64	261.01	0.03	247	276
222	262.04	262.42	0.03	248	277
223	263.45	263.83	0.03	250	279
224	264.87	265.25	0.03	251	280
225	266.28	266.66	0.03	252	282
226	267.7	268.08	0.03	254	283
227	269.12	269.5	0.03	255	285
228	270.54	270.93	0.03	256	286
229	271.96	272.36	0.03	258	288
230	273.39	273.79	0.03	259	289
231	274.82	275.22	0.03	260	291
232	276.26	276.65	0.03	262	292
233	277.69	278.09	0.03	263	294
234	279.13	279.53	0.03	264	295
235	280.57	280.98	0.03	266	297
236	282.01	282.42	0.03	267	298
237	283.46	283.87	0.03	268	300
238	284.91	285.32	0.03	270	301
239	286.36	286.78	0.03	271	303
240	287.82	288.23	0.03	273	304

k	BA	E(m)	CV	LCB	UCB
241	289.27	289.69	0.03	274	306
242	290.74	291.16	0.03	275	307
243	292.2	292.62	0.03	277	309
244	293.66	294.09	0.03	278	311
245	295.13	295.56	0.03	279	312
246	296.6	297.04	0.03	281	314
247	298.08	298.51	0.03	282	315
248	299.56	299.99	0.03	284	317
249	301.04	301.47	0.03	285	318
250	302.52	302.96	0.03	286	320
251	304.01	304.45	0.03	288	322
252	305.49	305.94	0.03	289	323
253	306.99	307.43	0.03	291	325
254	308.48	308.93	0.03	292	326
255	309.98	310.43	0.03	294	328
256	311.48	311.93	0.03	295	329
257	312.98	313.44	0.03	296	331
258	314.49	314.95	0.03	298	333
259	316	316.46	0.03	299	334
260	317.51	317.98	0.03	301	336
261	319.03	319.49	0.03	302	337
262	320.54	321.01	0.03	304	339
263	322.07	322.54	0.03	305	341
264	323.59	324.06	0.03	306	342
265	325.12	325.59	0.03	308	344
266	326.65	327.13	0.03	309	346
267	328.18	328.66	0.03	311	347
268	329.72	330.2	0.03	312	349
269	331.26	331.75	0.03	314	350
270	332.8	333.29	0.03	315	352
271	334.35	334.84	0.03	317	354
272	335.9	336.39	0.03	318	355
273	337.45	337.95	0.03	319	357
274	339	339.5	0.03	321	359
275	340.56	341.07	0.03	322	360
276	342.12	342.63	0.03	324	362
277	343.69	344.2	0.03	325	364
278	345.26	345.77	0.03	327	365
279	346.83	347.34	0.03	328	367
280	348.4	348.92	0.03	330	369

k	BA	E(m)	CV	LCB	UCB
281	349.98	350.5	0.03	331	370
282	351.56	352.08	0.03	333	372
283	353.15	353.67	0.03	334	374
284	354.73	355.26	0.03	336	375
285	356.33	356.86	0.03	337	377
286	357.92	358.45	0.03	339	379
287	359.52	360.05	0.03	340	380
288	361.12	361.66	0.03	342	382
289	362.72	363.26	0.03	343	384
290	364.33	364.87	0.03	345	386
291	365.94	366.49	0.03	346	387
292	367.56	368.11	0.03	348	389
293	369.17	369.73	0.03	349	391
294	370.8	371.35	0.03	351	392
295	372.42	372.98	0.03	352	394
296	374.05	374.61	0.03	354	396
297	375.68	376.24	0.03	356	398
298	377.32	377.88	0.03	357	399
299	378.96	379.52	0.03	359	401
300	380.6	381.17	0.03	360	403
301	382.24	382.82	0.03	362	405
302	383.89	384.47	0.03	363	406
303	385.55	386.13	0.03	365	408
304	387.2	387.79	0.03	366	410
305	388.86	389.45	0.03	368	412
306	390.53	391.12	0.03	370	413
307	392.19	392.79	0.03	371	415
308	393.86	394.46	0.03	373	417
309	395.54	396.14	0.03	374	419
310	397.22	397.82	0.03	376	421
311	398.9	399.5	0.03	377	422
312	400.59	401.19	0.03	379	424
313	402.27	402.88	0.03	381	426
314	403.97	404.58	0.03	382	428
315	405.67	406.28	0.03	384	430
316	407.37	407.98	0.03	385	431
317	409.07	409.69	0.03	387	433
318	410.78	411.4	0.03	389	435
319	412.49	413.12	0.03	390	437
320	414.21	414.84	0.03	392	439

k	BA	E(m)	CV	LCB	UCB
321	415.93	416.56	0.03	394	440
322	417.65	418.29	0.03	395	442
323	419.38	420.02	0.03	397	444
324	421.11	421.75	0.03	398	446
325	422.85	423.49	0.03	400	448
326	424.59	425.23	0.03	402	450
327	426.33	426.98	0.03	403	451
328	428.08	428.73	0.03	405	453
329	429.83	430.49	0.03	407	455
330	431.58	432.24	0.03	408	457
331	433.34	434.01	0.03	410	459
332	435.11	435.77	0.03	412	461
333	436.87	437.55	0.03	413	463
334	438.65	439.32	0.03	415	465
335	440.42	441.1	0.03	417	466
336	442.2	442.88	0.03	418	468
337	443.99	444.67	0.03	420	470
338	445.77	446.46	0.03	422	472
339	447.57	448.26	0.03	423	474
340	449.36	450.06	0.03	425	476
341	451.16	451.86	0.03	427	478
342	452.97	453.67	0.03	428	480
343	454.78	455.48	0.03	430	482
344	456.59	457.3	0.03	432	484
345	458.41	459.12	0.03	434	486
346	460.23	460.95	0.03	435	488
347	462.06	462.78	0.03	437	490
348	463.89	464.61	0.03	439	491
349	465.73	466.45	0.03	440	493
350	467.57	468.29	0.03	442	495
351	469.41	470.14	0.03	444	497
352	471.26	471.99	0.03	446	499
353	473.11	473.85	0.03	447	501
354	474.97	475.71	0.03	449	503
355	476.83	477.58	0.03	451	505
356	478.7	479.45	0.03	453	507
357	480.57	481.32	0.03	454	509
358	482.45	483.2	0.03	456	511
359	484.33	485.09	0.03	458	513
360	486.21	486.98	0.03	460	515

k BA E(m) CV LCB UCB 361 488.1 488.87 0.03 461 517 362 490 490.77 0.03 463 519 363 491.9 492.67 0.03 465 521 364 493.8 494.58 0.03 467 523 365 495.71 496.49 0.03 469 525 366 497.62 498.41 0.03 470 527 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 481 540 373 511.16 511.97 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85						
362 490 490.77 0.03 463 519 363 491.9 492.67 0.03 465 521 364 493.8 494.58 0.03 467 523 365 495.71 496.49 0.03 469 525 366 497.62 498.41 0.03 470 527 367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85<	k	BA	E(m)	CV	LCB	UCB
363 491.9 492.67 0.03 465 521 364 493.8 494.58 0.03 467 523 365 495.71 496.49 0.03 469 525 366 497.62 498.41 0.03 470 527 367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 491 550 379 522.95 523.	361	488.1	488.87	0.03	461	517
364 493.8 494.58 0.03 467 523 365 495.71 496.49 0.03 469 525 366 497.62 498.41 0.03 470 527 367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8<	362	490	490.77	0.03	463	519
365 495.71 496.49 0.03 469 525 366 497.62 498.41 0.03 470 527 367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8	363	491.9	492.67	0.03	465	521
366 497.62 498.41 0.03 470 527 367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 479 538 371 507.26 508.07 0.03 481 540 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 496 557 381 526.92 527.76	364	493.8	494.58	0.03	467	523
367 499.54 500.33 0.03 472 529 368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 496 557 381 526.92 527.76	365	495.71	496.49	0.03	469	525
368 501.47 502.26 0.03 474 532 369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76	366	497.62	498.41	0.03	470	527
369 503.39 504.19 0.03 476 534 370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 485 544 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 500 561 383 530.91 531.76	367	499.54	500.33	0.03	472	529
370 505.33 506.13 0.03 478 536 371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77	368	501.47	502.26	0.03	474	532
371 507.26 508.07 0.03 479 538 372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 502 563 384 532.91 531.76 0.03 505 567 385 534.92 535.78	369	503.39	504.19	0.03	476	534
372 509.21 510.01 0.03 481 540 373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 507 569 387 538.96 539.82	370	505.33	506.13	0.03	478	536
373 511.16 511.97 0.03 483 542 374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 537.8 0.03 507 569 387 538.96 539.82<	371	507.26	508.07	0.03	479	538
374 513.11 513.92 0.03 485 544 375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 507 569 387 538.96 539.82 0.03 507 569 388 540.98 541.85	372	509.21	510.01	0.03	481	540
375 515.07 515.88 0.03 487 546 376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 535.78 0.03 504 565 385 534.92 535.78 0.03 507 569 387 538.96 539.82 0.03 507 569 388 540.98 541.85 0.03 511 574 389 543.01 543.89	373	511.16	511.97	0.03	483	542
376 517.03 517.85 0.03 489 548 377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 507 569 387 538.96 539.82 0.03 507 569 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 515 578 391 547.09 547.97	374	513.11	513.92	0.03	485	544
377 519 519.82 0.03 491 550 378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 515 578 391 547.09 547.97<	375	515.07	515.88	0.03	487	546
378 520.97 521.8 0.03 492 552 379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 507 569 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.	376	517.03	517.85	0.03	489	548
379 522.95 523.78 0.03 494 554 380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 521 585 394 553.25 55	377	519	519.82	0.03	491	550
380 524.93 525.77 0.03 496 557 381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 521 585 394 553.25 554	378	520.97	521.8	0.03	492	552
381 526.92 527.76 0.03 498 559 382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556	379	522.95	523.78	0.03	494	554
382 528.91 529.76 0.03 500 561 383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558	380	524.93	525.77	0.03	496	557
383 530.91 531.76 0.03 502 563 384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560	381	526.92	527.76	0.03	498	559
384 532.91 533.77 0.03 504 565 385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560	382	528.91	529.76	0.03	500	561
385 534.92 535.78 0.03 505 567 386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 530 596 399 563.62 564	383	530.91	531.76	0.03	502	563
386 536.94 537.8 0.03 507 569 387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 532 598 399 563.62 564	384	532.91	533.77	0.03	504	565
387 538.96 539.82 0.03 509 572 388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 532 598 399 563.62 564.54 0.03 532 598	385	534.92	535.78	0.03	505	567
388 540.98 541.85 0.03 511 574 389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 532 598 399 563.62 564.54 0.03 532 598	386	536.94	537.8	0.03	507	569
389 543.01 543.89 0.03 513 576 390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 532 598 399 563.62 564.54 0.03 532 598	387	538.96	539.82	0.03	509	572
390 545.05 545.93 0.03 515 578 391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 532 598 399 563.62 564.54 0.03 532 598	388	540.98	541.85	0.03	511	574
391 547.09 547.97 0.03 517 580 392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	389	543.01	543.89	0.03	513	576
392 549.14 550.02 0.03 519 582 393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	390	545.05	545.93	0.03	515	578
393 551.19 552.08 0.03 521 585 394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	391	547.09	547.97	0.03	517	580
394 553.25 554.14 0.03 523 587 395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	392	549.14	550.02	0.03	519	582
395 555.31 556.21 0.03 525 589 396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	393	551.19	552.08	0.03	521	585
396 557.38 558.28 0.03 527 591 397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	394	553.25	554.14	0.03	523	587
397 559.46 560.36 0.03 528 593 398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	395	555.31	556.21	0.03	525	589
398 561.54 562.45 0.03 530 596 399 563.62 564.54 0.03 532 598	396	557.38	558.28	0.03	527	591
399 563.62 564.54 0.03 532 598	397	559.46	560.36	0.03	528	593
	398	561.54	562.45	0.03	530	596
400 565.71 566.63 0.03 534 600	399	563.62	564.54	0.03	532	598
	400	565.71	566.63	0.03	534	600

k	BA	E(m)	CV	LCB	UCB
401	567.81	568.73	0.03	536	602
402	569.91	570.84	0.03	538	605
403	572.02	572.95	0.03	540	607
404	574.14	575.07	0.03	542	609
405	576.26	577.2	0.03	544	611
406	578.39	579.33	0.03	546	614
407	580.52	581.47	0.03	548	616
408	582.66	583.61	0.03	550	618
409	584.8	585.76	0.03	552	621
410	586.95	587.91	0.03	554	623
411	589.11	590.07	0.03	556	625
412	591.27	592.24	0.03	558	627
413	593.44	594.41	0.03	560	630
414	595.61	596.59	0.03	562	632
415	597.8	598.78	0.03	564	634
416	599.98	600.97	0.03	567	637
417	602.18	603.17	0.03	569	639
418	604.38	605.37	0.03	571	641
419	606.58	607.59	0.03	573	644
420	608.8	609.8	0.03	575	646
421	611.01	612.03	0.03	577	649
422	613.24	614.26	0.03	579	651
423	615.47	616.49	0.03	581	653
424	617.71	618.74	0.03	583	656
425	619.96	620.99	0.03	585	658
426	622.21	623.24	0.03	587	661
427	624.47	625.51	0.03	589	663
428	626.73	627.78	0.03	592	665
429	629	630.05	0.03	594	668
430	631.28	632.34	0.03	596	670
431	633.57	634.63	0.03	598	673
432	635.86	636.92	0.03	600	675
433	638.16	639.23	0.03	602	678
434	640.47	641.54	0.03	604	680
435	642.78	643.86	0.03	607	683
436	645.1	646.18	0.03	609	685
437	647.43	648.52	0.03	611	688
438	649.76	650.86	0.03	613	690
439	652.1	653.2	0.03	615	693
440	654.45	655.56	0.03	618	695

k	BA	E(m)	CV	LCB	UCB
441	656.81	657.92	0.03	620	698
442	659.17	660.29	0.03	622	700
443	661.54	662.66	0.03	624	703
444	663.92	665.04	0.03	626	705
445	666.3	667.44	0.03	629	708
446	668.7	669.83	0.03	631	710
447	671.1	672.24	0.03	633	713
448	673.5	674.65	0.03	635	716
449	675.92	677.07	0.03	638	718
450	678.34	679.5	0.03	640	721
451	680.77	681.94	0.03	642	723
452	683.21	684.38	0.03	644	726
453	685.66	686.83	0.03	647	729
454	688.11	689.29	0.03	649	731
455	690.58	691.76	0.03	651	734
456	693.05	694.24	0.03	654	737
457	695.52	696.72	0.03	656	739
458	698.01	699.21	0.03	658	742
459	700.5	701.71	0.03	661	745
460	703.01	704.22	0.03	663	747
461	705.52	706.74	0.03	665	750
462	708.04	709.26	0.03	668	753
463	710.56	711.8	0.03	670	755
464	713.1	714.34	0.03	672	758
465	715.64	716.89	0.03	675	761
466	718.2	719.45	0.03	677	764
467	720.76	722.01	0.03	679	766
468	723.33	724.59	0.03	682	769
469	725.91	727.17	0.03	684	772
470	728.49	729.77	0.03	687	775
471	731.09	732.37	0.03	689	777
472	733.69	734.98	0.03	692	780
473	736.31	737.6	0.03	694	783
474	738.93	740.23	0.03	696	786
475	741.56	742.87	0.03	699	789
476	744.2	745.51	0.03	701	792
477	746.85	748.17	0.03	704	794
478	749.51	750.83	0.03	706	797
479	752.18	753.51	0.03	709	800
480	754.86	756.19	0.03	711	803
				1	

k	BA	E(m)	CV	LCB	UCB
481	757.54	758.89	0.03	714	806
482	760.24	761.59	0.03	716	809
483	762.95	764.3	0.03	719	812
484	765.66	767.03	0.03	721	815
485	768.39	769.76	0.03	724	818
486	771.12	772.5	0.03	726	820
487	773.87	775.25	0.03	729	823
488	776.62	778.01	0.03	732	826
489	779.39	780.78	0.03	734	829
490	782.16	783.57	0.03	737	832
491	784.95	786.36	0.03	739	835
492	787.74	789.16	0.03	742	838
493	790.55	791.97	0.03	745	841
494	793.37	794.8	0.03	747	844
495	796.19	797.63	0.03	750	847
496	799.03	800.47	0.03	752	851
497	801.88	803.33	0.03	755	854
498	804.73	806.19	0.03	758	857
499	807.6	809.07	0.03	760	860
500	810.48	811.96	0.03	763	863
501	813.37	814.85	0.03	766	866
502	816.27	817.76	0.03	769	869
503	819.19	820.68	0.03	771	872
504	822.11	823.61	0.03	774	875
505	825.04	826.56	0.03	777	879
506	827.99	829.51	0.03	779	882
507	830.95	832.47	0.03	782	885
508	833.92	835.45	0.03	785	888
509	836.9	838.44	0.03	788	891
510	839.89	841.44	0.03	791	895
511	842.89	844.45	0.03	793	898
512	845.91	847.47	0.03	796	901
513	848.94	850.51	0.03	799	904
514	851.98	853.56	0.03	802	908
515	855.03	856.62	0.03	805	911
516	858.09	859.69	0.03	807	914
517	861.17	862.78	0.03	810	918
518	864.26	865.87	0.03	813	921
519	867.36	868.98	0.03	816	924
520	870.47	872.1	0.03	819	928

k	BA	E(m)	CV	LCB	UCB
521	873.6	875.24	0.03	822	931
522	876.74	878.39	0.03	825	934
523	879.89	881.55	0.03	828	938
524	883.06	884.72	0.03	831	941
525	886.24	887.91	0.03	834	945
526	889.43	891.11	0.03	837	948
527	892.63	894.33	0.03	840	952
528	895.85	897.55	0.03	842	955
529	899.09	900.79	0.03	845	959
530	902.33	904.05	0.03	849	962
531	905.59	907.32	0.03	852	966
532	908.87	910.6	0.03	855	969
533	912.15	913.9	0.03	858	973
534	915.46	917.21	0.03	861	976
535	918.77	920.54	0.03	864	980
536	922.1	923.88	0.03	867	984
537	925.45	927.23	0.03	870	987
538	928.81	930.6	0.03	873	991
539	932.19	933.99	0.03	876	994
540	935.58	937.39	0.03	879	998
541	938.98	940.8	0.03	882	1002
542	942.4	944.23	0.03	886	1006
543	945.84	947.68	0.03	889	1009
544	949.29	951.14	0.03	892	1013
545	952.76	954.62	0.03	895	1017
546	956.24	958.11	0.03	898	1021
547	959.74	961.62	0.03	902	1024
548	963.25	965.15	0.03	905	1028
549	966.78	968.69	0.03	908	1032
550	970.33	972.25	0.03	912	1036
551	973.9	975.82	0.03	915	1040
552	977.48	979.41	0.03	918	1044
553	981.07	983.02	0.03	921	1048
554	984.69	986.65	0.03	925	1051
555	988.32	990.29	0.03	928	1055
556	991.97	993.95	0.03	932	1059
557	995.64	997.63	0.03	935	1063
558	999.32	1001.3	0.03	938	1067
559	1003	1005	0.03	942	1071
560	1006.7	1008.8	0.03	945	1075

k	BA	E(m)	CV	LCB	UCB
561	1010.5	1012.5	0.03	949	1079
562	1014.2	1016.3	0.03	952	1084
563	1018	1020.1	0.03	956	1088
564	1021.8	1023.9	0.03	959	1092
565	1025.6	1027.7	0.03	963	1096
566	1029.5	1031.6	0.03	966	1100
567	1033.3	1035.4	0.03	970	1104
568	1037.2	1039.3	0.03	973	1109
569	1041.1	1043.2	0.03	977	1113
570	1045	1047.1	0.03	980	1117
571	1048.9	1051.1	0.03	984	1121
572	1052.9	1055	0.03	988	1126
573	1056.8	1059	0.03	991	1130
574	1060.8	1063	0.03	995	1134
575	1064.8	1067.1	0.03	999	1139
576	1068.9	1071.1	0.03	1003	1143
577	1072.9	1075.2	0.03	1006	1147
578	1077	1079.3	0.03	1010	1152
579	1081.1	1083.4	0.03	1014	1156
580	1085.2	1087.5	0.03	1018	1161
581	1089.4	1091.7	0.03	1021	1165
582	1093.5	1095.8	0.03	1025	1170
583	1097.7	1100	0.03	1029	1175
584	1101.9	1104.3	0.03	1033	1179
585	1106.2	1108.5	0.03	1037	1184
586	1110.4	1112.8	0.03	1041	1188
587	1114.7	1117.1	0.03	1045	1193
588	1119	1121.4	0.03	1049	1198
589	1123.4	1125.8	0.03	1053	1203
590	1127.7	1130.1	0.03	1057	1207
591	1132.1	1134.5	0.03	1061	1212
592	1136.5	1139	0.03	1065	1217
593	1140.9	1143.4	0.03	1069	1222
594	1145.4	1147.9	0.03	1073	1227
595	1149.9	1152.4	0.03	1077	1232
596	1154.4	1156.9	0.03	1081	1237
597	1158.9	1161.5	0.03	1085	1241
598	1163.5	1166	0.03	1090	1246
599	1168.1	1170.6	0.03	1094	1252
600	1172.7	1175.3	0.03	1098	1257

k	BA	E(m)	CV	LCB	UCB
601	1177.3	1179.9	0.03	1102	1262
602	1182	1184.6	0.03	1107	1267
603	1186.7	1189.4	0.03	1111	1272
604	1191.5	1194.1	0.03	1115	1277
605	1196.2	1198.9	0.03	1120	1282
606	1201	1203.7	0.03	1124	1288
607	1205.8	1208.5	0.03	1128	1293
608	1210.7	1213.4	0.03	1133	1298
609	1215.6	1218.3	0.03	1137	1304
610	1220.5	1223.3	0.03	1142	1309
611	1225.4	1228.2	0.03	1146	1314
612	1230.4	1233.2	0.03	1151	1320
613	1235.4	1238.3	0.03	1155	1325
614	1240.5	1243.3	0.03	1160	1331
615	1245.6	1248.4	0.03	1165	1337
616	1250.7	1253.6	0.03	1169	1342
617	1255.8	1258.7	0.04	1174	1348
618	1261	1263.9	0.04	1179	1354
619	1266.2	1269.2	0.04	1184	1359
620	1271.5	1274.4	0.04	1188	1365
621	1276.8	1279.8	0.04	1193	1371
622	1282.1	1285.1	0.04	1198	1377
623	1287.5	1290.5	0.04	1203	1383
624	1292.9	1295.9	0.04	1208	1389
625	1298.3	1301.4	0.04	1213	1395
626	1303.8	1306.9	0.04	1218	1401
627	1309.3	1312.4	0.04	1223	1407
628	1314.9	1318	0.04	1228	1413
629	1320.5	1323.6	0.04	1233	1419
630	1326.1	1329.3	0.04	1238	1425
631	1331.8	1335	0.04	1243	1432
632	1337.5	1340.8	0.04	1249	1438
633	1343.3	1346.6	0.04	1254	1444
634	1349.1	1352.4	0.04	1259	1451
635	1355	1358.3	0.04	1265	1457
636	1360.9	1364.2	0.04	1270	1464
637	1366.8	1370.2	0.04	1275	1470
638	1372.8	1376.2	0.04	1281	1477
639	1378.9	1382.3	0.04	1286	1484
640	1384.9	1388.4	0.04	1292	1491

k	BA	E(m)	CV	LCB	UCB
641	1391.1	1394.6	0.04	1297	1497
642	1397.3	1400.8	0.04	1303	1504
643	1403.5	1407.1	0.04	1309	1511
644	1409.8	1413.4	0.04	1314	1518
645	1416.2	1419.8	0.04	1320	1525
646	1422.5	1426.2	0.04	1326	1532
647	1429	1432.7	0.04	1332	1540
648	1435.5	1439.2	0.04	1338	1547
649	1442.1	1445.8	0.04	1344	1554
650	1448.7	1452.5	0.04	1350	1561
651	1455.4	1459.2	0.04	1356	1569
652	1462.1	1465.9	0.04	1362	1576
653	1468.9	1472.8	0.04	1368	1584
654	1475.8	1479.7	0.04	1374	1592
655	1482.7	1486.6	0.04	1380	1599
656	1489.7	1493.6	0.04	1387	1607
657	1496.7	1500.7	0.04	1393	1615
658	1503.8	1507.9	0.04	1399	1623
659	1511	1515.1	0.04	1406	1631
660	1518.2	1522.4	0.04	1412	1639
661	1525.6	1529.7	0.04	1419	1647
662	1532.9	1537.2	0.04	1426	1655
663	1540.4	1544.7	0.04	1432	1664
664	1547.9	1552.2	0.04	1439	1672
665	1555.5	1559.9	0.04	1446	1681
666	1563.2	1567.6	0.04	1453	1689
667	1571	1575.4	0.04	1460	1698
668	1578.8	1583.3	0.04	1467	1707
669	1586.7	1591.3	0.04	1474	1716
670	1594.8	1599.3	0.04	1481	1725
671	1602.8	1607.5	0.04	1489	1734
672	1611	1615.7	0.04	1496	1743
673	1619.3	1624	0.04	1503	1752
674	1627.6	1632.4	0.04	1511	1762
675	1636.1	1640.9	0.04	1518	1771
676	1644.6	1649.5	0.04	1526	1781
677	1653.3	1658.2	0.04	1534	1791
678	1662	1667	0.04	1542	1801
679	1670.8	1675.9	0.04	1550	1811
680	1679.8	1684.9	0.04	1558	1821

681 1688.8 1694 0.04 1566 1831 682 1698 1703.2 0.04 1574 1841 683 1707.3 1712.5 0.04 1582 1852 684 1716.6 1722 0.04 1590 1862 685 1726.1 1731.6 0.04 1599 1873 686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1634 1918 690 1775.5 1781.2 0.04 1634 1929 691 1785.7 1791.6 0.04 1661 1953 691 187.5.7 1791.6 0.04 1661 1953 691 187.7 196.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694						
682 1698 1703.2 0.04 1574 1841 683 1707.3 1712.5 0.04 1582 1852 684 1716.6 1722 0.04 1590 1862 685 1726.1 1731.6 0.04 1599 1873 686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 691 185.7 1791.6 0.04 1661 1953 692 1876.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1690 1977 695 1828.2 <th>k</th> <th>BA</th> <th>E(m)</th> <th>CV</th> <th>LCB</th> <th>UCB</th>	k	BA	E(m)	CV	LCB	UCB
683 1707.3 1712.5 0.04 1582 1852 684 1716.6 1722 0.04 1590 1862 685 1726.1 1731.6 0.04 1599 1873 686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1690 1970 695 1828.2 1834.4 0.04 1690 1990 697 1850.4 </td <td>681</td> <td>1688.8</td> <td>1694</td> <td>0.04</td> <td>1566</td> <td>1831</td>	681	1688.8	1694	0.04	1566	1831
684 1716.6 1722 0.04 1590 1862 685 1726.1 1731.6 0.04 1599 1873 686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1661 1953 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1690 1990 695 1828.2 1834.4 0.04 1690 1990 697 1850.4 </td <td>682</td> <td>1698</td> <td>1703.2</td> <td>0.04</td> <td>1574</td> <td>1841</td>	682	1698	1703.2	0.04	1574	1841
685 1726.1 1731.6 0.04 1599 1873 686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1661 1953 693 1806.7 1812.7 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1690 1990 696 1839.2 1845.5 0.04 1709 2015 698 1861.7	683	1707.3	1712.5	0.04	1582	1852
686 1735.7 1741.2 0.04 1608 1884 687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1661 1953 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1740 205 701 1884.9<	684	1716.6	1722	0.04	1590	1862
687 1745.5 1751 0.04 1616 1895 688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1740 205 701 1884.9<	685	1726.1	1731.6	0.04	1599	1873
688 1755.4 1761 0.04 1625 1906 689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1761 2082 701 1896.7 1903.5 0.04 1761 2082 701 198.	686	1735.7	1741.2	0.04	1608	1884
689 1765.3 1771 0.04 1634 1918 690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1761 2082 701 1896.7 1903.5 0.04 1761 2082 702 19	687	1745.5	1751	0.04	1616	1895
690 1775.5 1781.2 0.04 1643 1929 691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1761 2082 702 1908.8 1915.6 0.04 1761 2082 704	688	1755.4	1761	0.04	1625	1906
691 1785.7 1791.6 0.04 1652 1941 692 1796.1 1802.1 0.04 1661 1953 693 1806.7 1812.7 0.04 1671 1965 694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 19	689	1765.3	1771	0.04	1634	1918
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694 1817.4 1823.5 0.04 1680 1977 695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985	692	1796.1	1802.1	0.04	1661	1953
695 1828.2 1834.4 0.04 1690 1990 696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1840 2186 710 2012	693	1806.7	1812.7	0.04	1671	1965
696 1839.2 1845.5 0.04 1699 2002 697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012	694	1817.4	1823.5	0.04	1680	1977
697 1850.4 1856.7 0.04 1709 2015 698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1864 2219 711 2026	695	1828.2	1834.4	0.04	1690	1990
698 1861.7 1868.1 0.04 1719 2028 699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026	696	1839.2	1845.5	0.04	1699	2002
699 1873.2 1879.7 0.04 1729 2041 700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040	697	1850.4	1856.7	0.04	1709	2015
700 1884.9 1891.5 0.04 1740 2055 701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5	698	1861.7	1868.1	0.04	1719	2028
701 1896.7 1903.5 0.04 1750 2068 702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 714 2070.3 2078.7 0.04 1902 2270 715 2085.4	699	1873.2	1879.7	0.04	1729	2041
702 1908.8 1915.6 0.04 1761 2082 703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4	700	1884.9	1891.5	0.04	1740	2055
703 1921 1927.9 0.04 1772 2096 704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 </td <td>701</td> <td>1896.7</td> <td>1903.5</td> <td>0.04</td> <td>1750</td> <td>2068</td>	701	1896.7	1903.5	0.04	1750	2068
704 1933.4 1940.5 0.04 1782 2111 705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7	702	1908.8	1915.6	0.04	1761	2082
705 1946.1 1953.2 0.04 1794 2125 706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8	703	1921	1927.9	0.04	1772	2096
706 1958.9 1966.2 0.04 1805 2140 707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2	704	1933.4	1940.5	0.04	1782	2111
707 1972 1979.4 0.04 1816 2155 708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	705	1946.1	1953.2	0.04	1794	2125
708 1985.3 1992.8 0.04 1828 2171 709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	706	1958.9	1966.2	0.04	1805	2140
709 1998.8 2006.5 0.04 1840 2186 710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	707	1972	1979.4	0.04	1816	2155
710 2012.6 2020.4 0.04 1852 2202 711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	708	1985.3	1992.8	0.04	1828	2171
711 2026.6 2034.5 0.04 1864 2219 712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	709	1998.8	2006.5	0.04	1840	2186
712 2040.9 2049 0.04 1877 2235 713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	710	2012.6	2020.4	0.04	1852	2202
713 2055.5 2063.7 0.04 1889 2252 714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	711	2026.6	2034.5	0.04	1864	2219
714 2070.3 2078.7 0.04 1902 2270 715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	712	2040.9	2049	0.04	1877	2235
715 2085.4 2094 0.05 1915 2287 716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	713	2055.5	2063.7	0.04	1889	2252
716 2100.9 2109.6 0.05 1929 2306 717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	714	2070.3	2078.7	0.04	1902	2270
717 2116.7 2125.5 0.05 1943 2324 718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	715	2085.4	2094	0.05	1915	2287
718 2132.8 2141.8 0.05 1957 2343 719 2149.2 2158.4 0.05 1971 2362	716	2100.9	2109.6	0.05	1929	2306
719 2149.2 2158.4 0.05 1971 2362	717	2116.7	2125.5	0.05	1943	2324
	718	2132.8	2141.8	0.05	1957	2343
720 2166 2175.4 0.05 1985 2382	719	2149.2	2158.4	0.05	1971	2362
	720	2166	2175.4	0.05	1985	2382

k	BA	E(m)	CV	LCB	UCB
721	2183.2	2192.8	0.05	2000	2402
722	2200.8	2210.6	0.05	2015	2423
723	2218.7	2228.8	0.05	2031	2445
724	2237.2	2247.5	0.05	2047	2467
725	2256	2266.6	0.05	2063	2489
726	2275.4	2286.2	0.05	2079	2512
727	2295.3	2306.4	0.05	2096	2536
728	2315.6	2327	0.05	2114	2560
729	2336.6	2348.3	0.05	2132	2586
730	2358.1	2370.1	0.05	2150	2612
731	2380.3	2392.6	0.05	2169	2638
732	2403.1	2415.8	0.05	2188	2666
733	2426.6	2439.7	0.05	2208	2695
734	2450.9	2464.4	0.05	2229	2724
735	2476	2489.9	0.05	2250	2755
736	2501.9	2516.3	0.05	2271	2787
737	2528.7	2543.6	0.05	2294	2820
738	2556.5	2571.9	0.05	2317	2855
739	2585.4	2601.4	0.05	2341	2890
740	2615.3	2632	0.05	2366	2928
741	2646.6	2663.8	0.05	2392	2967
742	2679.1	2697.1	0.06	2419	3008
743	2713.1	2731.9	0.06	2447	3051
744	2748.7	2768.3	0.06	2476	3096
745	2786	2806.5	0.06	2506	3144
746	2825.2	2846.8	0.06	2538	3195
747	2866.5	2889.3	0.06	2572	3249
748	2910.2	2934.3	0.06	2607	3306
749	2956.5	2982.1	0.06	2644	3367
750	3005.9	3033.1	0.06	2683	3433
751	3058.6	3087.7	0.06	2725	3504
752	3115.3	3146.4	0.07	2770	3581
753	3176.5	3209.6	0.07	2817	3663
754	3243	3277.7	0.07	2869	3748
755	3315.9	3350.3	0.07	2924	3829
756	3396.4	3426.2	0.07	2984	3895
757	3486.5	3502.9	0.07	3048	3939
758	3588.5	3576.9	0.06	3117	3965
759	3706.4	3644.7	0.06	3189	3979
760	3845.8	3703.7	0.05	3262	3986

k	BA	E(m)	CV	LCB	UCB
761	4016.4	3753	0.05	3334	3991
762	4236.3	3792.9	0.04	3402	3993
763	4546.3	3824.9	0.04	3466	3995
764	5076.2	3850.2	0.03	3523	3996
765	Inf	3870.3	0.03	3573	3997

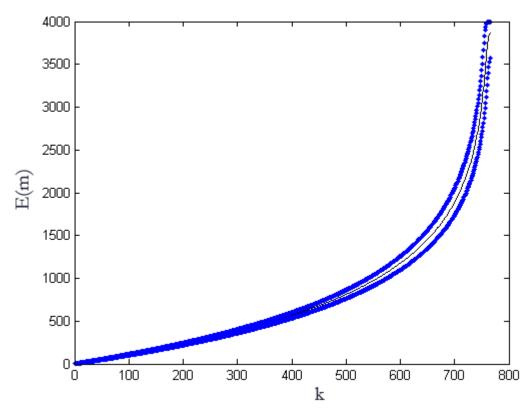


Figure 1: *Molecule-number expectation bounded by 95% confidence interval* The above plot shows the expectation value, E(m) in black, bounded by the upper and lower bounds to the 95% confidence interval. These values apply to the scenario where N=765, $1 \le m \le 4000$, and our *a priori* knowledge of *m* makes any value in this interval equally probable.

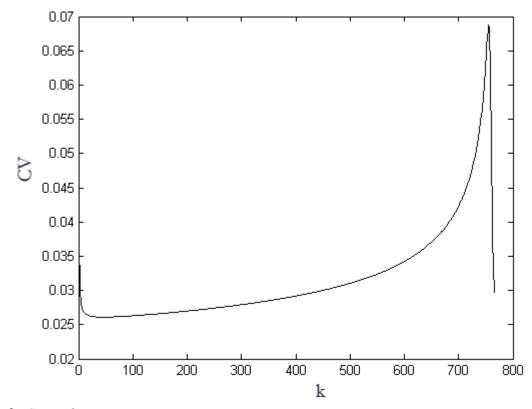


Figure 2: CV vs. k The above plot shows the coefficient of variance, or CV, in the same scenario as in Figure 1. Its rise to a peak just before hitting the maximum occupancy of k=765 corresponds to the widening of the confidence interval in Figure 1 in that region. This increase in uncertainty is related to the increased likelihood that a given signal is due to multiple molecules occupying a well, instead of just one.