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### 1. Coefficients of $P(Y^6)$ for $B_4$ to infinite order.

$B_{40} = 18.36$  for all  $\lambda$ . "SR" designates results of simple regression of the computed values of  $B_4$ . "SM" designates results of Seveck and Monson. "K" designates results of Katsura. "BM" designates results of Barker and Monaghan.

$\lambda$	$B_{41}$	$B_{42}$	$B_{43}$	$B_{44}$	$B_{45}$	$B_{46}$
1.2	-22.70	24.96	-20.37	7.33	-0.771	-0.018
1.25	-24.62	33.39	-38.64	19.12	-2.722	-0.062
1.3	-24.58	39.16	-63.21	40.49	-6.83	-0.32
1.4	-20.14	33.45	-126.10	136.56	-33.84	-2.39
1.5	-9.26	-11.52	-187.26	368.76	-139.70	-6.68
1.5(SM)	-9.23	-11.80	-186.86	368.99	-140.60	-6.31
1.6	7.34	-116.00	-175.98	789.41	-416.87	-22.97
1.7	29.80	-305.37	14.77	1480.1	-1104.92	-67.32
1.75	42.31	-434.82	222.70	1933.7	-1701.65	-91.84
1.8	55.41	-588.95	530.71	2464.8	-2573.37	-147.7
1.9	81.38	-975.97	1576.0	3642.8	-5491.91	-345.9
2.0	104.56	-1488.6	3494.6	4483.9	-10618.7	-919.1
2.0(SM)	104.57	-1490.4	3497.3	4528.2	-10763.9	-815.3
2.0(K)	98.72	-1510.1	3439.4	4478.9	-10899.9	-947.4
2.0(BM)	104.38	-1491.4	3477.8	4477.4	-10810.0	-840.0
2.0(SR)	-119.05	1496.8	-9375.5	28337.0	-30343.0	5048.3

### 2. Coefficients in the $Y$ expansion for $B_{5j}$ with $\lambda = 1.2-2.0$ .

$j \backslash \lambda$	2.0	1.9	1.8	1.75	1.6	1.5	1.4	1.3	1.25	1.2
1	174.58	199.00	193.32	178.27	162.55	123.93	73.13	29.20	-3.43	-16.04
2	1152.21	-122.94	-735.09	-836.72	-860.52	-699.09	-433.00	-181.06	-28.12	15.10
3	-4151.71	4173.75	5969.21	5647.54	4808.52	2840.38	1238.06	310.30	-27.62	-61.76
4	-110624.0	-70691.6	-38151.3	-26145.9	-17020.9	-5864.0	-1190.66	131.97	211.79	132.85
5	298649.5	115643.7	34593.4	15582.8	4923.6	-2274.7	-2247.69	-1028.69	-278.90	-115.07
6	124784.1	106992.1	62341.5	43817.9	29199.4	11260.5	3483.10	813.44	126.97	38.75
7	-493857.5	-181168.4	-60347.9	-33409.2	-17911.7	-4533.3	-935.6	-145.11	-13.97	-3.313
8	-109182.8	-37259.0	-11450.0	-6054.8	-3074.5	-701.76	-128.66	-17.20	-1.382	-0.262
9	-10693.3	-3290.10	-892.71	-435.03	-205.61	-39.61	-6.245	-0.776	-0.073	-0.0046
10	-494.60	-128.21	-26.00	-10.25	-3.585	-0.259	-0.005	0.0000	0.0000	0.0000

### 3. Coefficients in the $Y$ expansion for $B_{6j}$ with $\lambda = 1.25-2.0$ .

$j \backslash \lambda$	2.0	1.75	1.5	1.25
1	-306.85	39.74	190.53	17.93
2	12895	4289.2	-133.40	-83.44
3	-131531	-34903.1	467.13	82.97
4	1263427	113577.7	-8181.10	25.56
5	-3259688	146252.8	27910.49	-305.72
6	-5630475	-1036316.8	-15552.91	578.80
7	21310165	506545.9	-32740.93	-353.84
8	5758255	1241645.4	35190.29	76.74
9	-26790825	-690738.9	-5379.09	-2.5248
10	-11099103	-256831.7	-1801.70	-0.6734
11	-2523627	-42840.3	-202.64	-0.0577
12	-367405	-4065.0	-9.0804	0.0000
13	-37022	-242.86	-0.1784	0.0000
14	-2457.2	-9.1839	-0.0005	0.0000
15	-82.29	-0.1060	0.0000	0.0000

### 4. B4 for $\lambda = 1.2-2.0$ computed by Mayer Sampling Monte Carlo.

$\beta \epsilon \lambda$	2.0	1.9	1.8	1.75	1.7	1.6	1.5	1.4	1.3	1.25	1.2
1.667										-399.0	18.92
1.538									-611.1	-25.42	35.77
1.429									-99.58	41.60	22.82
1.333									29.19	39.16	12.25
1.250						-18474		-321.2	51.47	27.07	5.51
1.111						-4610	-670.6	44.21	31.43	9.39	1.34
1.053						-2330	-223.3	66.35			
1.000				-11160		-1158	-31.45	63.79	13.64	2.82	1.57
0.909				-3981	-1902	-214.5	79.30	43.49	5.45	1.59	2.87
0.833				-1423	-564.8		77.71		2.48	2.05	4.24
0.800	-17988	-6584	-1853	-828.7	-273.7	79.87	68.01	18.38	2.07	2.65	4.86
0.667	-3405	-949.8	-92.93	50.14	97.10	72.89	25.68	4.57	3.49	5.46	7.24
0.571	-685.6	-58.19	93.47	94.60	77.91	34.68	9.45	3.38	5.92	7.53	8.73
0.500	-80.57	79.28	81.65	63.91	44.71	16.37	5.13	4.94	7.84	8.98	9.79
0.444	51.72	79.50	54.03	38.26	25.00	9.09	5.04	6.81	9.22	10.00	10.59
0.400	69.55	59.93	34.43	23.24	15.05	6.82	6.18	8.40	10.24	10.77	11.22
0.364	60.29	42.28	22.58	15.34	10.48	6.70	7.61	9.70	11.04	11.40	11.75
0.333	46.53	29.89		11.28	8.71	7.43	8.95	10.72	11.65	11.90	12.20
0.308		21.77	12.21	9.60	8.35	8.45	10.12	11.54	12.16	12.34	12.60
0.286		16.65	10.62	9.15	8.67	9.53	11.11	12.21	12.58	12.69	12.93
0.267		13.73	9.79	9.30	9.31	10.56	11.94	12.74	12.95	13.02	13.24
0.250	17.06	11.96	9.87	9.78	10.12	11.45	12.64	13.20	13.26	13.30	13.51
0.222	13.08	10.84	10.83	11.18	11.76	12.96	13.74	13.90	13.77	13.78	13.97
0.200	11.43	11.24	11.93	12.57	13.17	14.13	14.54	14.43	14.18	14.17	14.36
0.167	11.84	13.11	14.33	14.83	15.22	15.65	15.56	15.16	14.80	14.79	14.96
0.125	15.12	16.40	17.20	17.36	17.41	17.16	16.59	15.99	15.61	15.60	15.74
0.100	17.39	18.25	18.55	18.48	18.32	17.78	17.08	16.46	16.11	16.10	16.25
0.050	20.30	20.16	19.72	19.44	19.11	18.44	17.83	17.39	17.19	17.18	17.26
0.020	19.91	19.61	19.25	19.04	18.47	18.47	18.17	17.96	17.87	17.88	17.92

## 5. B5 for $\lambda = 1.2-2.0$ computed by Mayer Sampling Monte Carlo.

$\beta\epsilon\lambda$	2.0	1.9	1.8	1.75	1.6	1.5	1.4	1.3	1.25	1.2
1.818										-3610
1.667								-10223		62.39
1.538								-16486	-1384	38.29
1.429								-2689	166.29	-54.56
1.333								-41.61	51.50	-63.80
1.250					-1607349		-8101	178.79	-69.33	-38.40
1.176					-618863	-61175	-1510	55.19		
1.111					-252770			-17.01	-61.97	-11.45
1.053					-100726	-5692				
1.000				-845910		-1663		-78.37		3.30
0.952						-62.93				
0.909				-213333		276.53		-45.62		9.00
0.833 -2757424				-58718		196.61		-22.74		11.94
0.800 -1682151			-84223	-30793	282.54	79.37	-99.43	-13.08	7.12	12.67
0.730 -565897				-6077	342.88	-65.31		3.03		3.03
0.667 -192077	-38233		-4127	-519.06	29.68	-122.88	-37.71	10.63	14.99	15.57
0.571 -27466	-3246		52.87	171.88	-144.36	-75.21	-1.94	17.45	17.60	17.12
0.500 -4177	-16.80		23.14	-78.34	-115.39	-25.13	13.96	19.96	19.08	18.37
0.444 -490.63	17.31		-120.31	-164.08	-63.30	1.33	21.27	21.36	20.11	19.46
0.400 -63.35	-104.02		-143.62	-139.88	-23.48	15.13	24.15	22.23	21.13	20.35
0.364 -82.48	-161.77		-129.67	-102.89	-0.35	23.58	25.92	22.91	21.82	21.01
0.333 -139.57	-154.91			-64.80	14.05	27.82	27.04	23.63	22.44	21.63
0.308 -151.26	-134.40		-67.38	-33.04	23.44	30.15	27.49	24.15	22.94	22.07
0.286 -148.95	-105.23		-35.11	-12.58	28.78	31.44	28.00	24.59	23.32	22.45
0.267 -128.87	-74.36		-15.37	3.97	32.55	32.16	28.37	24.95	23.78	22.80
0.250 -103.68	-48.69		0.64	16.09	34.69	32.88	28.57	25.24	24.07	23.20
0.222 -62.87	-13.49		20.41	30.19	36.91	33.20	29.07	25.75	24.59	23.69
0.200 -26.96	10.32		31.96	37.38	37.80	33.33	29.28	26.13	24.95	24.15
0.167 12.87	33.83		42.42	42.77	38.07	33.37	29.59	26.71	25.62	24.71
0.125 40.29	45.23		44.50	43.07	36.97	33.05	29.78	27.17	26.30	25.58
0.100 45.25	45.68		43.02	41.48		32.58	29.82	27.55	26.66	26.14
0.050 39.00	38.16		36.84	35.82		31.09	29.40	28.06	27.38	27.08
0.020 32.18	32.20		32.06	31.66		29.53	28.71	28.16	27.90	27.78
0.000 28.22	28.22		28.22		28.22		28.22		28.22	

## 6. B6 for $\lambda = 1.2-2.0$ computed by Mayer Sampling Monte Carlo.

$\beta\epsilon\lambda$	2.0	1.9	1.8	1.75	1.6	1.5	1.4	1.3	1.25	1.2
1.818										-20770.7
1.667								-333814.7	-695369	-64201.8
1.538								-1468046	-35829.4	19885.9
1.429								34481.84	7264.67	-6721.19
1.333								71315.30	-6005.86	-1087.79
1.250							83469.9	-13214.52	-3840.21	-312.18
1.176								1638.20	708.44	
1.111					-16658926		1300.67	6399.70	-969.71	173.72
1.053					-5250980			-1086.45	-147.25	
1.000				-71243547	-1704114	-50438.7	-1341.7	-836.4	256.8	102.4
0.909				-13789354	-129546.0	-9653.3	-4513.8	-212.6	25.5	19.2
0.833				-2676574	-56849.9	-9997.1	368.3	42.6	22.2	33.8
0.800				-1347742	-10311.12	616.77	-660.85	33.40	33.63	29.67
0.730		-7507560	-972867	-185866.9	-8155.33	-1313.29	-59.18	87.45	47.64	32.81
0.667		-1752912	-156363	-22584.3	-4141.52	-370.84	22.80	66.09	25.44	25.67
0.571		-119440.2	-8601.74	-2249.76	-1529.14	7.92	67.48	47.13	34.80	30.64
0.500		-14057.41	-4169.78	-3798.06	-279.01	133.73	87.49	40.60	36.59	31.44
0.444	-13809.7	-2515.33	-1773.32	-1385.58	44.80	149.07	59.66	39.38	36.39	34.19
0.400	-3796.23	-2579.04	-1446.39	-551.55	189.86	116.53	59.99	40.74	38.13	34.57
0.364	-1772.49	-1237.10	-335.36	-58.90	181.29	96.66	55.49	42.94	38.78	35.25
0.333	-1851.98	-869.11	29.80	159.28	163.65	83.11	55.28	43.62	39.24	35.51
0.308	-920.48	-413.00	166.00	218.79	142.90	80.78	53.15	43.55	39.77	36.39
0.286	-613.70	90.39	246.60	226.96	118.23	71.69	54.59	43.38	39.64	37.00
0.267	-356.56	98.71	236.86	219.59	105.81	73.48	56.01	43.90	40.27	37.12
0.250	-64.29	200.74	224.38	214.52	96.18	68.60	53.22	43.60	40.17	37.01
0.222	237.79	271.82	201.74	171.94	89.98	66.11	52.71	43.98	40.65	37.37
0.200	291.88	244.84	161.81	144.67	84.02	66.30	52.71	44.02	40.92	38.11
0.167	233.49	178.70	128.71	108.25	72.28	61.01	51.20	43.62	40.79	37.88
0.125	143.00	111.29	89.80	81.82	64.33	56.60	48.92	43.56	40.95	39.41
0.100	95.31	82.58	72.55	69.56	60.47	53.97	48.23	43.08	41.09	39.06
0.050	45.24	50.13	51.37	51.71	49.39	47.23	43.93	41.80	40.49	39.70
0.020	37.35	40.55	42.88	43.17		43.13	42.09	40.88	40.78	39.59
0.000	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74

## 7. Perturbative virial coefficients for B4.

$\lambda$	$B_{41}$	Est. err.	$B_{42}$	Est. err.	$B_{43}$	Est. err.	$B_{44}$	Est. err.
1.2	-22.705	0.024	13.607	0.061	0.808	0.053	-9.703	0.025
1.25	-24.620	0.025	21.083	0.086	-9.349	0.081	-20.429	0.045
1.3	-24.577	0.035	26.876	0.048	-28.137	0.064	-32.160	0.071
1.4	-20.432	0.031	23.258	0.173	-97.958	0.215	-31.639	0.160
1.5	-9.260	0.035	-16.146	0.251	-200.320	0.337	81.205	0.327
1.6	7.345	0.145	-112.325	0.226	-290.751	0.348	460.648	0.610
1.7	29.910	0.046	-290.074	0.504	-286.802	0.796	1324.19	1.20
1.75	42.309	0.049	-413.670	0.567	-205.073	0.946	2006.75	1.60
1.8	55.187	0.054	-562.138	0.679	-41.206	1.131	2905.22	2.12
1.9	81.027	0.065	-942.954	0.945	643.266	1.773	5413.87	3.55
2.0	104.56	0.024	-1436.31	1.295	2023.40	0.053	8908.82	5.74