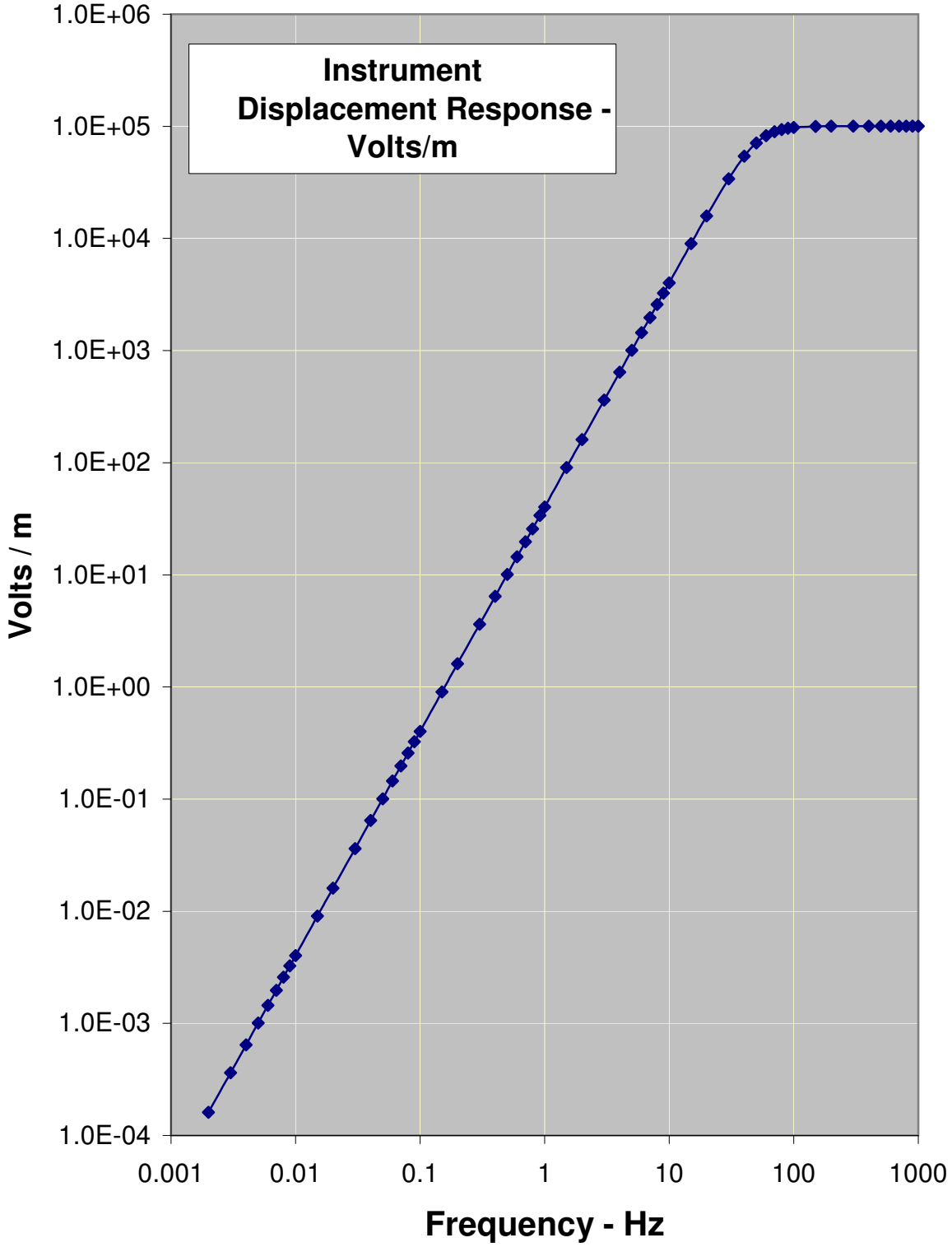
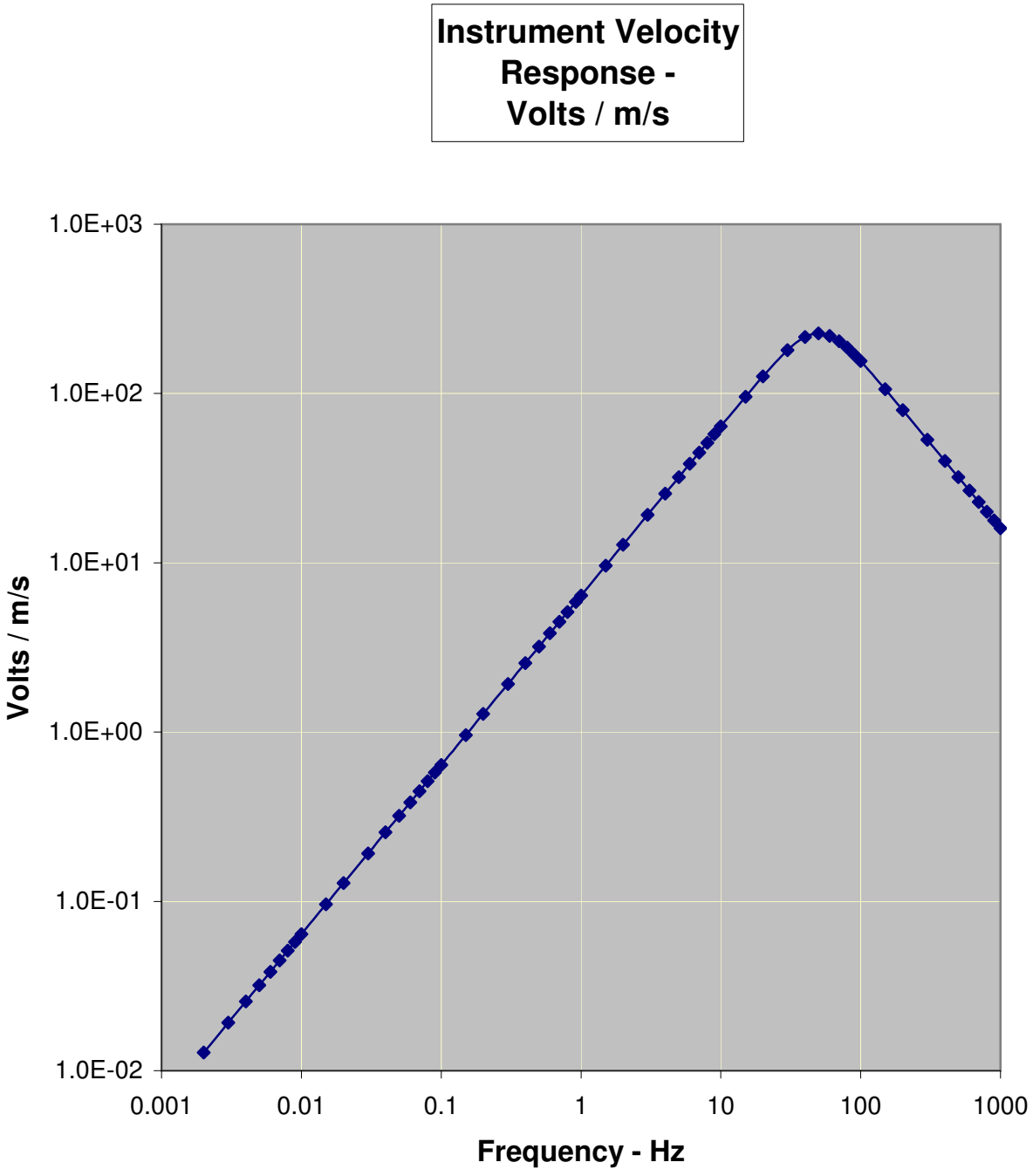
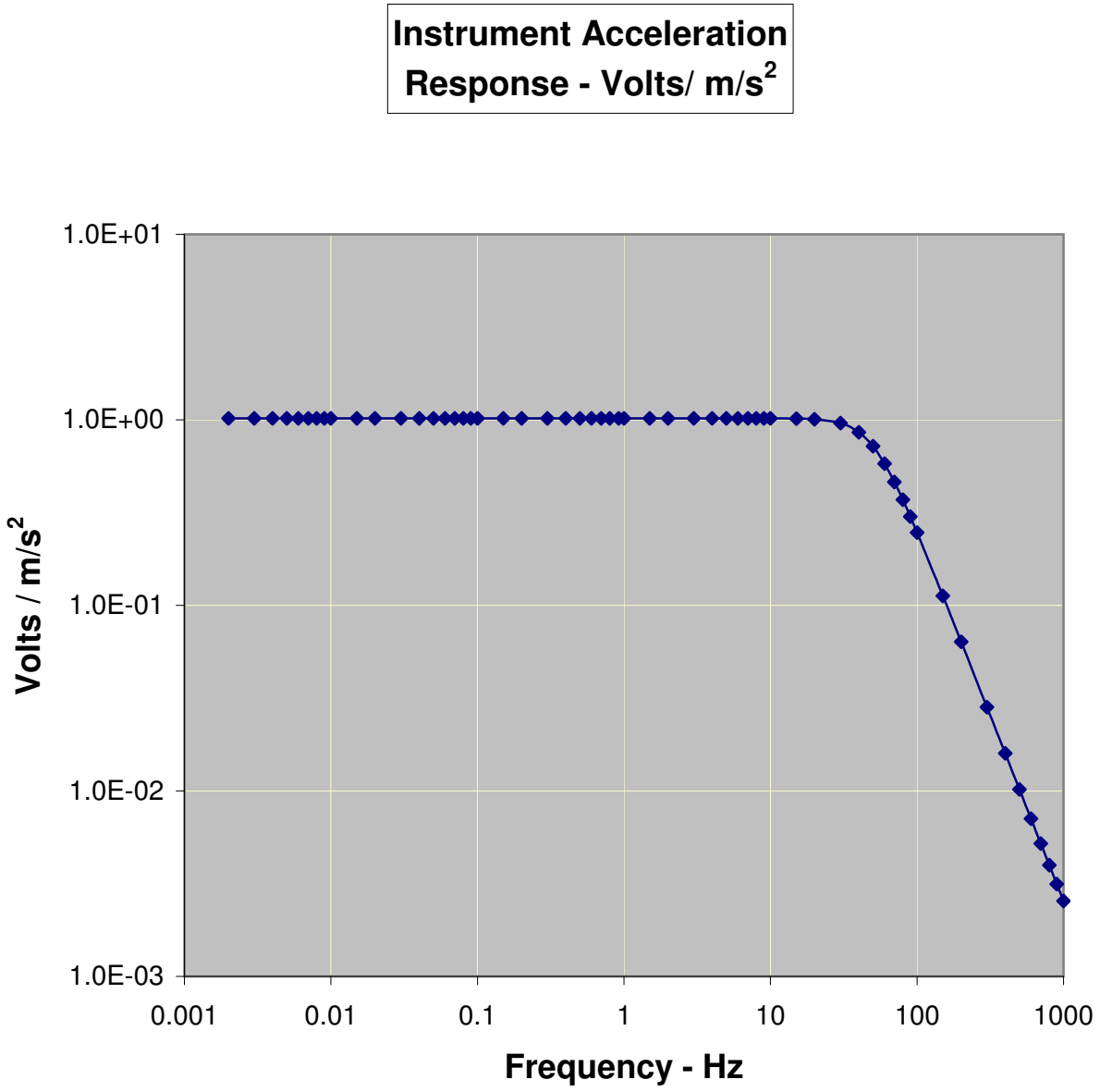

Instrument
Displacement Response -
Volts/m
1.0E+06
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
1.0E-04
Volts / m
0.001
0.01
0.1
1
10
100
1000
Frequency - Hz


Instrument Velocity Response - Volts / m/s
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
Volts / m/s
0.001
0.01
0.1
1
10
100
1000
Frequency - Hz


Instrument Acceleration Response - Volts/ m/s2
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
Volts / m/s2
0.001
0.01
0.1
1
10
100
1000
Frequency - Hz

Response of Kinemetrics FBA-23 accelerometer 0.25 g full-scale = 1.019 V/m/s^2 50Hz corner

							Xg = Ground Ampl. - m		
Sensitivity	100,571	Volts/m	@ 1000 Hz	(to get 1.019 V/m/s^2)			Vg = Xg ω - m/s		
							Ag = Xg ω^2 - m/s^2		
F_0	50	Hz	Natural Frequency		Given		Disp. X_p	$\frac{X_g \ \omega^2/\omega_0^2}{1-\omega^2/\omega_0^2 + j\,2\zeta\omega/\omega_0}$	
ω_0	314.159	sec^{-1}	Undamped Natural Frequency		= 2π F_0		Volts = Sensitivity * Xp		
							Volts/ m = Volts / Xg		
ζ	0.707		Damping factor		=1/2Q		Volts/ m/s = Volts / Vg		
X_g	0.01	m	Test amplitude		Assumed		Volts/ m/s^2 = Volts / Ag		
Frequency		Peak Ground-Motion			Displacement	Instrument Response			
F - Hz	ω - sec^{-1}	Xg - m	Vg - m/s	Ag - m/s^2	Xp - m	Volts	Displacement - Volts/ m	Velocity - Volts/ m/s	Acceleration - Volts/ m/s^2
0.002	0.01257	0.010	0.0001257	1.5791E-06	1.6000E-11	1.6E-06	1.6091E-04	1.2805E-02	1.0190E+00
0.003	0.01885	0.010	0.0001885	3.5531E-06	3.6000E-11	3.6E-06	3.6206E-04	1.9208E-02	1.0190E+00
0.004	0.02513	0.010	0.0002513	6.3165E-06	6.4000E-11	6.4E-06	6.4366E-04	2.5610E-02	1.0190E+00
0.005	0.03142	0.010	0.0003142	9.8696E-06	1.0000E-10	1E-05	1.0057E-03	3.2013E-02	1.0190E+00
0.006	0.0377	0.010	0.000377	1.4212E-05	1.4400E-10	1.4E-05	1.4482E-03	3.8415E-02	1.0190E+00
0.007	0.04398	0.010	0.0004398	1.9344E-05	1.9600E-10	2E-05	1.9712E-03	4.4818E-02	1.0190E+00
0.008	0.05027	0.010	0.0005027	2.5266E-05	2.5600E-10	2.6E-05	2.5746E-03	5.1221E-02	1.0190E+00
0.009	0.05655	0.010	0.0005655	3.1978E-05	3.2400E-10	3.3E-05	3.2585E-03	5.7623E-02	1.0190E+00
0.010	0.06283	0.010	0.0006283	3.9478E-05	4.0000E-10	4E-05	4.0229E-03	6.4026E-02	1.0190E+00
0.015	0.09425	0.010	0.0009425	8.8826E-05	9.0000E-10	9.1E-05	9.0514E-03	9.6038E-02	1.0190E+00
0.020	0.12566	0.010	0.0012566	1.5791E-04	1.6000E-09	0.00016	1.6091E-02	1.2805E-01	1.0190E+00
0.030	0.1885	0.010	0.001885	3.5531E-04	3.6000E-09	0.00036	3.6206E-02	1.9208E-01	1.0190E+00
0.040	0.25133	0.010	0.0025133	6.3165E-04	6.4000E-09	0.00064	6.4366E-02	2.5610E-01	1.0190E+00
0.050	0.31416	0.010	0.0031416	9.8696E-04	1.0000E-08	0.00101	1.0057E-01	3.2013E-01	1.0190E+00
0.060	0.37699	0.010	0.0037699	1.4212E-03	1.4400E-08	0.00145	1.4482E-01	3.8415E-01	1.0190E+00

Frequency		Peak Ground-Motion			Displacement	Instrument Response			
F - Hz	ω - sec^{-1}	Xg - m	Vg - m/s	Ag - m/s^2	Xp - m	Volts	Displacement - Volts/ m	Velocity - Volts/ m/s	Acceleration - Volts/ m/s^2
0.070	0.43982	0.010	0.0043982	1.9344E-03	1.9600E-08	0.00197	1.9712E-01	4.4818E-01	1.0190E+00
0.080	0.50265	0.010	0.0050265	2.5266E-03	2.5600E-08	0.00257	2.5746E-01	5.1221E-01	1.0190E+00
0.090	0.56549	0.010	0.0056549	3.1978E-03	3.2400E-08	0.00326	3.2585E-01	5.7623E-01	1.0190E+00
0.100	0.62832	0.010	0.0062832	3.9478E-03	4.0000E-08	0.00402	4.0229E-01	6.4026E-01	1.0190E+00
0.150	0.94248	0.010	0.0094248	8.8826E-03	9.0000E-08	0.00905	9.0514E-01	9.6038E-01	1.0190E+00
0.200	1.25664	0.010	0.0125664	1.5791E-02	1.6000E-07	0.01609	1.6091E+00	1.2805E+00	1.0190E+00
0.300	1.88496	0.010	0.0188496	3.5531E-02	3.6000E-07	0.03621	3.6206E+00	1.9208E+00	1.0190E+00
0.400	2.51327	0.010	0.0251327	6.3165E-02	6.4000E-07	0.06437	6.4366E+00	2.5610E+00	1.0190E+00
0.500	3.14159	0.010	0.0314159	9.8696E-02	1.0000E-06	0.10057	1.0057E+01	3.2013E+00	1.0190E+00
0.600	3.76991	0.010	0.0376991	1.4212E-01	1.4400E-06	0.14482	1.4482E+01	3.8415E+00	1.0190E+00
0.700	4.39823	0.010	0.0439823	1.9344E-01	1.9600E-06	0.19712	1.9712E+01	4.4818E+00	1.0190E+00
0.800	5.02655	0.010	0.0502655	2.5266E-01	2.5600E-06	0.25746	2.5746E+01	5.1221E+00	1.0190E+00
0.918	5.76796	0.010	0.0576796	3.3269E-01	3.3709E-06	0.33902	3.3902E+01	5.8776E+00	1.0190E+00
1.000	6.28319	0.010	0.0628319	3.9478E-01	4.0000E-06	0.40229	4.0229E+01	6.4026E+00	1.0190E+00
1.500	9.42478	0.010	0.0942478	8.8826E-01	9.0000E-06	0.90514	9.0514E+01	9.6038E+00	1.0190E+00
2.000	12.5664	0.010	0.1256637	1.5791E+00	1.6000E-05	1.60914	1.6091E+02	1.2805E+01	1.0190E+00
3.000	18.8496	0.010	0.1884956	3.5531E+00	3.6000E-05	3.62055	3.6205E+02	1.9208E+01	1.0190E+00
4.000	25.1327	0.010	0.2513274	6.3165E+00	6.3999E-05	6.43644	6.4364E+02	2.5610E+01	1.0190E+00
5.000	31.4159	0.010	0.3141593	9.8696E+00	9.9995E-05	10.0567	1.0057E+03	3.2011E+01	1.0190E+00
6.000	37.6991	0.010	0.3769911	1.4212E+01	1.4399E-04	14.4808	1.4481E+03	3.8412E+01	1.0189E+00
7.000	43.9823	0.010	0.439823	1.9344E+01	1.9596E-04	19.7083	1.9708E+03	4.4810E+01	1.0188E+00
8.000	50.2655	0.010	0.5026548	2.5266E+01	2.5592E-04	25.738	2.5738E+03	5.1204E+01	1.0187E+00
9.000	56.5487	0.010	0.5654867	3.1978E+01	3.2383E-04	32.5683	3.2568E+03	5.7593E+01	1.0185E+00
10.000	62.8319	0.010	0.6283185	3.9478E+01	3.9969E-04	40.1968	4.0197E+03	6.3975E+01	1.0182E+00
15.000	94.2478	0.010	0.9424778	8.8826E+01	8.9640E-04	90.1522	9.0152E+03	9.5654E+01	1.0149E+00
20.000	125.664	0.010	1.2566371	1.5791E+02	1.5800E-03	158.901	1.5890E+04	1.2645E+02	1.0062E+00
30.000	188.496	0.010	1.8849556	3.5531E+02	3.3875E-03	340.687	3.4069E+04	1.8074E+02	9.5886E-01
40.000	251.327	0.010	2.5132741	6.3165E+02	5.3913E-03	542.207	5.4221E+04	2.1574E+02	8.5839E-01

Frequency		Peak Ground-Motion			Displacement	Instrument Response			
F - Hz	ω - sec^{-1}	Xg - m	Vg - m/s	Ag - m/s^2	Xp - m	Volts	Displacement - Volts/ m	Velocity - Volts/ m/s	Acceleration - Volts/ m/s^2
50.000	314.159	0.010	3.1415927	9.8696E+02	7.0721E-03	711.254	7.1125E+04	2.2640E+02	7.2065E-01
60.000	376.991	0.010	3.7699112	1.4212E+03	8.2149E-03	826.179	8.2618E+04	2.1915E+02	5.8132E-01
70.000	439.823	0.010	4.3982297	1.9344E+03	8.9087E-03	895.96	8.9596E+04	2.0371E+02	4.6316E-01
80.000	502.655	0.010	5.0265482	2.5266E+03	9.3155E-03	936.874	9.3687E+04	1.8639E+02	3.7080E-01
90.000	565.487	0.010	5.6548668	3.1978E+03	9.5560E-03	961.064	9.6106E+04	1.6995E+02	3.0054E-01
100.000	628.319	0.010	6.2831853	3.9478E+03	9.7021E-03	975.754	9.7575E+04	1.5530E+02	2.4716E-01
150.000	942.478	0.010	9.424778	8.8826E+03	9.9392E-03	999.595	9.9959E+04	1.0606E+02	1.1253E-01
200.000	1256.64	0.010	12.566371	1.5791E+04	9.9807E-03	1003.77	1.0038E+05	7.9878E+01	6.3565E-02
300.000	1884.96	0.010	18.849556	3.5531E+04	9.9962E-03	1005.33	1.0053E+05	5.3335E+01	2.8295E-02
400.000	2513.27	0.010	25.132741	6.3165E+04	9.9988E-03	1005.59	1.0056E+05	4.0011E+01	1.5920E-02
500.000	3141.59	0.010	31.415927	9.8696E+04	9.9995E-03	1005.67	1.0057E+05	3.2011E+01	1.0190E-02
600.000	3769.91	0.010	37.699112	1.4212E+05	9.9998E-03	1005.69	1.0057E+05	2.6677E+01	7.0762E-03
700.000	4398.23	0.010	43.982297	1.9344E+05	9.9999E-03	1005.7	1.0057E+05	2.2866E+01	5.1989E-03
800.000	5026.55	0.010	50.265482	2.5266E+05	9.9999E-03	1005.71	1.0057E+05	2.0008E+01	3.9804E-03
900.000	5654.87	0.010	56.548668	3.1978E+05	1.0000E-02	1005.71	1.0057E+05	1.7785E+01	3.1450E-03
1000.000	6283.19	0.010	62.831853	3.9478E+05	1.0000E-02	1005.71	1.0057E+05	1.6006E+01	2.5475E-03