**Electronic supplementary information (ESI)**

for

Six-dimensional intermolecular potential energy surface and vibrational states

of the benzene-methane vdW complex

Physical Chemistry Chemical Physics (PCCP)

Toru Sasaki, Masaaki Nakamura, Yasuhiro Ohshima

*The Department of Chemistry, School of Science, Institute of Science Tokyo*, *JAPAN*

E-mail: ohshima@chem.sci.isct.ac.jp

**S1. Optimized geometries and XYZ files**

Geometries of the benzene and methane monomers and the benzene–methane complex are provided as separate xyz files in the accompanying ZIP archive (coordinate.zip). Each file is written in standard XYZ format and contains the final Cartesian coordinates in angstrom.

The contents of the ZIP file are as follows:

OptimizedCoorinates\_Bz.xyz optimized geometry for the benzene monomer

OptimizedCoorinates\_Methane.xyz optimized geometry for the methane monomer

Coorinates\_Complex.xyz most stable geometry for the benzene-methane complex, in the analytical 6D PES, where one C–H bond of methane points toward the center of the benzene ring. The equilibrium intermolecular distance is *R* = 3.712 Å.

R*aaa*\_rho*bb*\_phi*ccc*\_theta*ddd*\_chi*eee*.xyz (525 files in total)

geometry for the benzene-methane complex, for the configuration with *R* = *a*.*aa* Å, ** = 0.*bb* Å, ** = *ccc* deg, ** = *ddd* deg, and ** = *eee* deg.

**S2. Single-point energy dataset (Table S1)**

Table S1 provides the *ab initio* single-point energies and the corresponding fitted values. Coordinates are *R* (Å), *ρ* (Å), *φ*Bz (deg.), *θ*X (deg.), χX (deg.). Energies are in cm⁻¹.

**Table S1. Single-point energies and fitted model values**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *R*/Å | *ρ*/Å | *φ*Bz/deg. | θX/deg. | χX/deg. | Single point energy | Fitted potential energy | residual |
| 3.4 | 0 | 0 | 30 | 0 | 155.388 | 167.8944 | -12.5063 |
| 3.55 | 0 | 0 | 30 | 0 | 44.33388 | 53.34245 | -9.00857 |
| 3.7 | 0 | 0 | 30 | 0 | 27.87328 | 31.60087 | -3.72759 |
| 3.85 | 0 | 0 | 30 | 0 | 62.55027 | 62.71682 | -0.16655 |
| 4 | 0 | 0 | 30 | 0 | 122.0279 | 122.7987 | -0.77081 |
| 3.4 | 0 | 0 | 30 | 30 | 150.5596 | 164.523 | -13.9634 |
| 3.55 | 0 | 0 | 30 | 30 | 53.33234 | 63.35088 | -10.0185 |
| 3.7 | 0 | 0 | 30 | 30 | 44.9923 | 50.6908 | -5.6985 |
| 3.85 | 0 | 0 | 30 | 30 | 84.05878 | 86.58993 | -2.53115 |
| 4 | 0 | 0 | 30 | 30 | 144.8533 | 147.1567 | -2.30341 |
| 3.4 | 0 | 0 | 30 | 60 | 155.6075 | 157.6842 | -2.07664 |
| 3.55 | 0 | 0 | 30 | 60 | 83.40036 | 82.52459 | 0.87577 |
| 3.7 | 0 | 0 | 30 | 60 | 87.78985 | 87.28037 | 0.50948 |
| 3.85 | 0 | 0 | 30 | 60 | 131.6848 | 131.9987 | -0.31392 |
| 4 | 0 | 0 | 30 | 60 | 192.2598 | 192.788 | -0.5282 |
| 3.4 | 0 | 0 | 30 | 90 | 161.5333 | 154.2168 | 7.31658 |
| 3.55 | 0 | 0 | 30 | 90 | 100.5194 | 91.68987 | 8.82951 |
| 3.7 | 0 | 0 | 30 | 90 | 109.2984 | 104.78 | 4.51835 |
| 3.85 | 0 | 0 | 30 | 90 | 153.4128 | 153.5344 | -0.12159 |
| 4 | 0 | 0 | 30 | 90 | 213.1099 | 214.0613 | -0.95146 |
| 3.4 | 0 | 0 | 60 | 0 | 172.946 | 172.3888 | 0.55721 |
| 3.55 | 0 | 0 | 60 | 0 | 35.55489 | 34.80955 | 0.74534 |
| 3.7 | 0 | 0 | 60 | 0 | 1.31685 | -3.66616 | 4.98301 |
| 3.85 | 0 | 0 | 60 | 0 | 25.02011 | 17.00886 | 8.01125 |
| 4 | 0 | 0 | 60 | 0 | 78.79139 | 72.94302 | 5.84837 |
| 3.4 | 0 | 0 | 60 | 30 | 154.2907 | 166.8982 | -12.6075 |
| 3.55 | 0 | 0 | 60 | 30 | 45.8702 | 55.20862 | -9.33842 |
| 3.7 | 0 | 0 | 60 | 30 | 30.72645 | 35.17769 | -4.45124 |
| 3.85 | 0 | 0 | 60 | 30 | 65.84239 | 66.85256 | -1.01017 |
| 4 | 0 | 0 | 60 | 30 | 125.32 | 126.3416 | -1.02162 |
| 3.4 | 0 | 0 | 60 | 60 | 156.4854 | 155.053 | 1.43243 |
| 3.55 | 0 | 0 | 60 | 60 | 91.95987 | 88.41846 | 3.54141 |
| 3.7 | 0 | 0 | 60 | 60 | 100.0804 | 98.55269 | 1.52774 |
| 3.85 | 0 | 0 | 60 | 60 | 144.8533 | 145.5029 | -0.6496 |
| 4 | 0 | 0 | 60 | 60 | 205.2088 | 205.3774 | -0.1686 |
| 3.4 | 0 | 0 | 60 | 90 | 157.5828 | 148.6984 | 8.88434 |
| 3.55 | 0 | 0 | 60 | 90 | 106.2257 | 101.2292 | 4.99649 |
| 3.7 | 0 | 0 | 60 | 90 | 120.0526 | 123.0838 | -3.03122 |
| 3.85 | 0 | 0 | 60 | 90 | 167.0202 | 174.3095 | -7.28927 |
| 4 | 0 | 0 | 60 | 90 | 228.0341 | 231.0145 | -2.98037 |
| 3.4 | 0 | 0 | 90 | 0 | 148.5843 | 160.8636 | -12.2793 |
| 3.55 | 0 | 0 | 90 | 0 | 61.89185 | 70.82988 | -8.93803 |
| 3.7 | 0 | 0 | 90 | 0 | 59.03868 | 65.00984 | -5.97116 |
| 3.85 | 0 | 0 | 90 | 0 | 100.0804 | 103.4507 | -3.37025 |
| 4 | 0 | 0 | 90 | 0 | 160.8749 | 162.2608 | -1.38589 |
| 3.4 | 0 | 0 | 90 | 30 | 159.1191 | 161.6315 | -2.51239 |
| 3.55 | 0 | 0 | 90 | 30 | 79.88877 | 77.57503 | 2.31374 |
| 3.7 | 0 | 0 | 90 | 30 | 80.76666 | 77.73223 | 3.03443 |
| 3.85 | 0 | 0 | 90 | 30 | 122.9058 | 122.1503 | 0.75548 |
| 4 | 0 | 0 | 90 | 30 | 183.4808 | 186.9377 | -3.45688 |
| 3.4 | 0 | 0 | 90 | 60 | 159.1191 | 161.6315 | -2.51239 |
| 3.55 | 0 | 0 | 90 | 60 | 79.88877 | 77.57503 | 2.31374 |
| 3.7 | 0 | 0 | 90 | 60 | 80.76666 | 77.73223 | 3.03443 |
| 3.85 | 0 | 0 | 90 | 60 | 122.9058 | 122.1503 | 0.75548 |
| 4 | 0 | 0 | 90 | 60 | 183.4808 | 186.9377 | -3.45688 |
| 3.4 | 0 | 0 | 90 | 90 | 148.5843 | 160.8636 | -12.2793 |
| 3.55 | 0 | 0 | 90 | 90 | 61.89185 | 70.82988 | -8.93803 |
| 3.7 | 0 | 0 | 90 | 90 | 59.03868 | 65.00984 | -5.97116 |
| 3.85 | 0 | 0 | 90 | 90 | 100.0804 | 103.4507 | -3.37025 |
| 4 | 0 | 0 | 90 | 90 | 160.8749 | 162.2608 | -1.38589 |
| 3.4 | 0 | 0 | 54.7 | 0 | 174.2629 | 172.6802 | 1.58268 |
| 3.55 | 0 | 0 | 54.7 | 0 | 35.11594 | 33.74548 | 1.37046 |
| 3.7 | 0 | 0 | 54.7 | 0 | 0 | -5.6926 | 5.6926 |
| 3.85 | 0 | 0 | 54.7 | 0 | 23.04484 | 14.41315 | 8.63169 |
| 4 | 0 | 0 | 54.7 | 0 | 76.59665 | 70.1711 | 6.42555 |
| 3.4 | 0 | 0 | 54.7 | 90 | 157.8023 | 148.3644 | 9.43785 |
| 3.55 | 0 | 0 | 54.7 | 90 | 106.8841 | 101.9186 | 4.96555 |
| 3.7 | 0 | 0 | 54.7 | 90 | 120.7111 | 124.4035 | -3.69247 |
| 3.85 | 0 | 0 | 54.7 | 90 | 167.8981 | 175.8664 | -7.96828 |
| 4 | 0 | 0 | 54.7 | 90 | 228.912 | 232.4156 | -3.50352 |
| 3.4 | 0 | 0 | 90 | 45 | 164.606 | 161.8875 | 2.71851 |
| 3.55 | 0 | 0 | 90 | 45 | 88.66775 | 79.82341 | 8.84434 |
| 3.7 | 0 | 0 | 90 | 45 | 90.20407 | 81.97303 | 8.23104 |
| 3.85 | 0 | 0 | 90 | 45 | 131.2458 | 128.3835 | 2.8623 |
| 4 | 0 | 0 | 90 | 45 | 190.504 | 195.1633 | -4.65932 |
| 3.4 | 0.3 | 0 | 30 | 0 | 179.9692 | 189.8917 | -9.9225 |
| 3.55 | 0.3 | 0 | 30 | 0 | 62.55027 | 70.84129 | -8.29102 |
| 3.7 | 0.3 | 0 | 30 | 0 | 41.26123 | 45.47731 | -4.21608 |
| 3.85 | 0.3 | 0 | 30 | 0 | 72.86558 | 73.67633 | -0.81075 |
| 4 | 0.3 | 0 | 30 | 0 | 129.929 | 131.4094 | -1.48039 |
| 3.4 | 0.3 | 0 | 30 | 30 | 94.59357 | 116.5554 | -21.9618 |
| 3.55 | 0.3 | 0 | 30 | 30 | 25.45906 | 36.53811 | -11.0791 |
| 3.7 | 0.3 | 0 | 30 | 30 | 32.92119 | 38.23416 | -5.31297 |
| 3.85 | 0.3 | 0 | 30 | 30 | 80.32771 | 83.93593 | -3.60822 |
| 4 | 0.3 | 0 | 30 | 30 | 145.5117 | 151.2194 | -5.70773 |
| 3.4 | 0.3 | 0 | 30 | 60 | 103.3726 | 107.3535 | -3.98097 |
| 3.55 | 0.3 | 0 | 30 | 60 | 56.62445 | 53.34877 | 3.27568 |
| 3.7 | 0.3 | 0 | 30 | 60 | 75.2798 | 72.4607 | 2.8191 |
| 3.85 | 0.3 | 0 | 30 | 60 | 126.6369 | 126.9817 | -0.34481 |
| 4 | 0.3 | 0 | 30 | 60 | 191.6014 | 194.4877 | -2.88633 |
| 3.4 | 0.3 | 0 | 30 | 90 | 180.4082 | 171.488 | 8.92016 |
| 3.55 | 0.3 | 0 | 30 | 90 | 114.3463 | 104.4626 | 9.88365 |
| 3.7 | 0.3 | 0 | 30 | 90 | 119.6137 | 113.9304 | 5.6833 |
| 3.85 | 0.3 | 0 | 30 | 90 | 161.5333 | 159.7678 | 1.76553 |
| 4 | 0.3 | 0 | 30 | 90 | 219.2552 | 217.9459 | 1.30924 |
| 3.4 | 0.3 | 0 | 60 | 0 | 203.6725 | 196.3342 | 7.33828 |
| 3.55 | 0.3 | 0 | 60 | 0 | 57.28288 | 54.25644 | 3.02644 |
| 3.7 | 0.3 | 0 | 60 | 0 | 16.89955 | 12.15834 | 4.74121 |
| 3.85 | 0.3 | 0 | 60 | 0 | 36.65226 | 29.91643 | 6.73583 |
| 4 | 0.3 | 0 | 60 | 0 | 87.78985 | 83.50174 | 4.28811 |
| 3.4 | 0.3 | 0 | 60 | 30 | 92.39882 | 119.8501 | -27.4512 |
| 3.55 | 0.3 | 0 | 60 | 30 | 15.36322 | 29.31532 | -13.9521 |
| 3.7 | 0.3 | 0 | 60 | 30 | 17.55797 | 23.64053 | -6.08256 |
| 3.85 | 0.3 | 0 | 60 | 30 | 62.11132 | 65.11805 | -3.00673 |
| 4 | 0.3 | 0 | 60 | 30 | 126.1979 | 131.3239 | -5.12595 |
| 3.4 | 0.3 | 0 | 60 | 60 | 110.3957 | 103.912 | 6.48376 |
| 3.55 | 0.3 | 0 | 60 | 60 | 67.81766 | 58.43226 | 9.3854 |
| 3.7 | 0.3 | 0 | 60 | 60 | 88.2288 | 82.92263 | 5.30617 |
| 3.85 | 0.3 | 0 | 60 | 60 | 140.0248 | 139.6754 | 0.34937 |
| 4 | 0.3 | 0 | 60 | 60 | 204.5504 | 206.2667 | -1.71634 |
| 3.4 | 0.3 | 0 | 60 | 90 | 170.7513 | 164.458 | 6.29325 |
| 3.55 | 0.3 | 0 | 60 | 90 | 116.7605 | 112.4903 | 4.27019 |
| 3.7 | 0.3 | 0 | 60 | 90 | 128.1732 | 130.7225 | -2.54935 |
| 3.85 | 0.3 | 0 | 60 | 90 | 173.385 | 179.0312 | -5.64627 |
| 4 | 0.3 | 0 | 60 | 90 | 233.0821 | 233.3874 | -0.30536 |
| 3.4 | 0.3 | 0 | 90 | 0 | 169.6539 | 180.5797 | -10.9258 |
| 3.55 | 0.3 | 0 | 90 | 0 | 77.47454 | 86.04749 | -8.57295 |
| 3.7 | 0.3 | 0 | 90 | 0 | 70.89031 | 76.60507 | -5.71476 |
| 3.85 | 0.3 | 0 | 90 | 0 | 109.0789 | 112.129 | -3.05009 |
| 4 | 0.3 | 0 | 90 | 0 | 167.8981 | 168.5902 | -0.69215 |
| 3.4 | 0.3 | 0 | 90 | 30 | 164.606 | 181.0203 | -16.4143 |
| 3.55 | 0.3 | 0 | 90 | 30 | 87.57038 | 92.46536 | -4.89498 |
| 3.7 | 0.3 | 0 | 90 | 30 | 88.2288 | 89.00017 | -0.77137 |
| 3.85 | 0.3 | 0 | 90 | 30 | 129.49 | 130.5013 | -1.0113 |
| 4 | 0.3 | 0 | 90 | 30 | 188.9677 | 192.9398 | -3.97218 |
| 3.4 | 0.3 | 0 | 90 | 60 | 195.3324 | 181.0203 | 14.31211 |
| 3.55 | 0.3 | 0 | 90 | 60 | 103.3726 | 92.46536 | 10.90719 |
| 3.7 | 0.3 | 0 | 90 | 60 | 96.56884 | 89.00018 | 7.56866 |
| 3.85 | 0.3 | 0 | 90 | 60 | 133.8795 | 130.5013 | 3.3782 |
| 4 | 0.3 | 0 | 90 | 60 | 191.3819 | 192.9398 | -1.55796 |
| 3.4 | 0.3 | 0 | 90 | 90 | 169.6539 | 180.5797 | -10.9258 |
| 3.55 | 0.3 | 0 | 90 | 90 | 77.47454 | 86.04749 | -8.57295 |
| 3.7 | 0.3 | 0 | 90 | 90 | 70.89031 | 76.60507 | -5.71476 |
| 3.85 | 0.3 | 0 | 90 | 90 | 109.0789 | 112.129 | -3.05009 |
| 4 | 0.3 | 0 | 90 | 90 | 167.8981 | 168.5902 | -0.69215 |
| 3.4 | 0.3 | 0 | 54.7 | 0 | 205.2088 | 196.7427 | 8.46609 |
| 3.55 | 0.3 | 0 | 54.7 | 0 | 57.0634 | 53.30951 | 3.75389 |
| 3.7 | 0.3 | 0 | 54.7 | 0 | 15.5827 | 10.24904 | 5.33366 |
| 3.85 | 0.3 | 0 | 54.7 | 0 | 34.89647 | 27.43786 | 7.45861 |
| 4 | 0.3 | 0 | 54.7 | 0 | 85.59511 | 80.84696 | 4.74815 |
| 3.4 | 0.3 | 0 | 54.7 | 90 | 171.1902 | 164.025 | 7.16519 |
| 3.55 | 0.3 | 0 | 54.7 | 90 | 117.4189 | 113.0807 | 4.33821 |
| 3.7 | 0.3 | 0 | 54.7 | 90 | 129.0511 | 131.9432 | -2.89216 |
| 3.85 | 0.3 | 0 | 54.7 | 90 | 174.4823 | 180.4892 | -6.00684 |
| 4 | 0.3 | 0 | 54.7 | 90 | 234.1794 | 234.6895 | -0.51008 |
| 3.4 | 0.3 | 0 | 90 | 45 | 185.2366 | 181.1672 | 4.0694 |
| 3.55 | 0.3 | 0 | 90 | 45 | 103.8115 | 94.60465 | 9.20685 |
| 3.7 | 0.3 | 0 | 90 | 45 | 101.3973 | 93.13188 | 8.2654 |
| 3.85 | 0.3 | 0 | 90 | 45 | 139.8053 | 136.6255 | 3.17989 |
| 4 | 0.3 | 0 | 90 | 45 | 197.0882 | 201.0564 | -3.96815 |
| 3.4 | 0.3 | -120 | 30 | 0 | 256.7853 | 239.5171 | 17.26825 |
| 3.55 | 0.3 | -120 | 30 | 0 | 105.5673 | 101.953 | 3.61431 |
| 3.7 | 0.3 | -120 | 30 | 0 | 64.52554 | 63.61412 | 0.91142 |
| 3.85 | 0.3 | -120 | 30 | 0 | 84.93668 | 82.63358 | 2.3031 |
| 4 | 0.3 | -120 | 30 | 0 | 135.6353 | 133.8241 | 1.81122 |
| 3.4 | 0.3 | -120 | 30 | 30 | 264.028 | 244.5125 | 19.51552 |
| 3.55 | 0.3 | -120 | 30 | 30 | 121.5889 | 116.7584 | 4.83054 |
| 3.7 | 0.3 | -120 | 30 | 30 | 86.03405 | 84.99922 | 1.03483 |
| 3.85 | 0.3 | -120 | 30 | 30 | 108.8594 | 107.0319 | 1.82755 |
| 4 | 0.3 | -120 | 30 | 30 | 159.997 | 157.4457 | 2.55131 |
| 3.4 | 0.3 | -120 | 30 | 60 | 202.1361 | 185.6852 | 16.4509 |
| 3.55 | 0.3 | -120 | 30 | 60 | 112.5905 | 102.4574 | 10.13311 |
| 3.7 | 0.3 | -120 | 30 | 60 | 106.8841 | 101.0889 | 5.7952 |
| 3.85 | 0.3 | -120 | 30 | 60 | 144.4143 | 141.1204 | 3.29396 |
| 4 | 0.3 | -120 | 30 | 60 | 201.0388 | 198.2992 | 2.73952 |
| 3.4 | 0.3 | -120 | 30 | 90 | 140.6832 | 121.8626 | 18.82062 |
| 3.55 | 0.3 | -120 | 30 | 90 | 90.42355 | 73.35093 | 17.07262 |
| 3.7 | 0.3 | -120 | 30 | 90 | 105.5673 | 95.79357 | 9.77373 |
| 3.85 | 0.3 | -120 | 30 | 90 | 153.1933 | 150.8105 | 2.38275 |
| 4 | 0.3 | -120 | 30 | 90 | 214.8657 | 215.5312 | -0.66552 |
| 3.4 | 0.3 | -120 | 60 | 0 | 180.4082 | 179.1435 | 1.2647 |
| 3.55 | 0.3 | -120 | 60 | 0 | 44.33388 | 43.47904 | 0.85484 |
| 3.7 | 0.3 | -120 | 60 | 0 | 10.09583 | 5.87556 | 4.22027 |
| 3.85 | 0.3 | -120 | 60 | 0 | 33.36014 | 26.81355 | 6.54659 |
| 4 | 0.3 | -120 | 60 | 0 | 86.25353 | 82.66525 | 3.58828 |
| 3.4 | 0.3 | -120 | 60 | 30 | 207.623 | 214.3991 | -6.77608 |
| 3.55 | 0.3 | -120 | 60 | 30 | 80.54719 | 88.59107 | -8.04388 |
| 3.7 | 0.3 | -120 | 60 | 30 | 53.33234 | 58.1958 | -4.86346 |
| 3.85 | 0.3 | -120 | 60 | 30 | 81.20561 | 82.1839 | -0.97829 |
| 4 | 0.3 | -120 | 60 | 30 | 135.8548 | 135.9245 | -0.06974 |
| 3.4 | 0.3 | -120 | 60 | 60 | 207.1841 | 215.6517 | -8.46769 |
| 3.55 | 0.3 | -120 | 60 | 60 | 125.32 | 128.4854 | -3.1654 |
| 3.7 | 0.3 | -120 | 60 | 60 | 122.0279 | 123.7607 | -1.73278 |
| 3.85 | 0.3 | -120 | 60 | 60 | 159.3386 | 159.8442 | -0.5056 |
| 4 | 0.3 | -120 | 60 | 60 | 214.8657 | 211.7039 | 3.1618 |
| 3.4 | 0.3 | -120 | 60 | 90 | 185.895 | 181.6487 | 4.24627 |
| 3.55 | 0.3 | -120 | 60 | 90 | 125.759 | 123.2677 | 2.49124 |
| 3.7 | 0.3 | -120 | 60 | 90 | 133.8795 | 137.0053 | -3.12578 |
| 3.85 | 0.3 | -120 | 60 | 90 | 176.6771 | 182.1341 | -5.45703 |
| 4 | 0.3 | -120 | 60 | 90 | 234.8379 | 234.2239 | 0.61395 |
| 3.4 | 0.3 | -120 | 90 | 0 | 85.15616 | 101.1791 | -16.0229 |
| 3.55 | 0.3 | -120 | 90 | 0 | 28.97065 | 36.26877 | -7.29812 |
| 3.7 | 0.3 | -120 | 90 | 0 | 43.67545 | 47.58616 | -3.91071 |
| 3.85 | 0.3 | -120 | 90 | 0 | 94.37409 | 97.79737 | -3.42328 |
| 4 | 0.3 | -120 | 90 | 0 | 160.436 | 164.7267 | -4.29072 |
| 3.4 | 0.3 | -120 | 90 | 30 | 141.3417 | 141.32 | 0.02165 |
| 3.55 | 0.3 | -120 | 90 | 30 | 72.86558 | 67.576 | 5.28958 |
| 3.7 | 0.3 | -120 | 90 | 30 | 79.23034 | 74.49072 | 4.73962 |
| 3.85 | 0.3 | -120 | 90 | 30 | 124.2226 | 123.3355 | 0.88711 |
| 4 | 0.3 | -120 | 90 | 30 | 185.895 | 191.0081 | -5.11304 |
| 3.4 | 0.3 | -120 | 90 | 60 | 212.0125 | 220.7206 | -8.70812 |
| 3.55 | 0.3 | -120 | 90 | 60 | 114.1268 | 117.3547 | -3.22791 |
| 3.7 | 0.3 | -120 | 90 | 60 | 103.1531 | 103.5096 | -0.35655 |
| 3.85 | 0.3 | -120 | 90 | 60 | 137.6106 | 137.6671 | -0.05654 |
| 4 | 0.3 | -120 | 90 | 60 | 193.3572 | 194.8716 | -1.51448 |
| 3.4 | 0.3 | -120 | 90 | 90 | 259.858 | 259.9803 | -0.12232 |
| 3.55 | 0.3 | -120 | 90 | 90 | 129.2706 | 135.8262 | -6.55565 |
| 3.7 | 0.3 | -120 | 90 | 90 | 99.64148 | 105.624 | -5.98248 |
| 3.85 | 0.3 | -120 | 90 | 90 | 124.8811 | 126.4606 | -1.57952 |
| 4 | 0.3 | -120 | 90 | 90 | 176.0187 | 172.4538 | 3.56484 |
| 3.4 | 0.3 | -120 | 54.7 | 0 | 205.2088 | 196.8566 | 8.35215 |
| 3.55 | 0.3 | -120 | 54.7 | 0 | 57.0634 | 53.38094 | 3.68246 |
| 3.7 | 0.3 | -120 | 54.7 | 0 | 15.80217 | 10.29068 | 5.51149 |
| 3.85 | 0.3 | -120 | 54.7 | 0 | 34.89647 | 27.45842 | 7.43805 |
| 4 | 0.3 | -120 | 54.7 | 0 | 85.59511 | 80.85251 | 4.7426 |
| 3.4 | 0.3 | -120 | 54.7 | 90 | 171.4097 | 163.9111 | 7.49861 |
| 3.55 | 0.3 | -120 | 54.7 | 90 | 117.6384 | 113.0093 | 4.62912 |
| 3.7 | 0.3 | -120 | 54.7 | 90 | 129.2706 | 131.9016 | -2.63104 |
| 3.85 | 0.3 | -120 | 54.7 | 90 | 174.7018 | 180.4686 | -5.7668 |
| 4 | 0.3 | -120 | 54.7 | 90 | 234.1794 | 234.684 | -0.50454 |
| 3.4 | 0.3 | -120 | 90 | 45 | 180.8471 | 181.1672 | -0.32009 |
| 3.55 | 0.3 | -120 | 90 | 45 | 101.1778 | 94.60464 | 6.57316 |
| 3.7 | 0.3 | -120 | 90 | 45 | 99.86096 | 93.13188 | 6.72908 |
| 3.85 | 0.3 | -120 | 90 | 45 | 138.708 | 136.6255 | 2.08252 |
| 4 | 0.3 | -120 | 90 | 45 | 196.4298 | 201.0564 | -4.62658 |
| 3.4 | 0.3 | -240 | 30 | 0 | 111.0542 | 140.2663 | -29.2122 |
| 3.55 | 0.3 | -240 | 30 | 0 | 24.36168 | 39.72958 | -15.3679 |
| 3.7 | 0.3 | -240 | 30 | 0 | 20.85009 | 27.34049 | -6.4904 |
| 3.85 | 0.3 | -240 | 30 | 0 | 62.33079 | 64.71907 | -2.38828 |
| 4 | 0.3 | -240 | 30 | 0 | 124.8811 | 128.9946 | -4.11358 |
| 3.4 | 0.3 | -240 | 30 | 30 | 175.1408 | 194.8871 | -19.7463 |
| 3.55 | 0.3 | -240 | 30 | 30 | 71.54873 | 85.64671 | -14.098 |
| 3.7 | 0.3 | -240 | 30 | 30 | 58.59973 | 66.86242 | -8.26269 |
| 3.85 | 0.3 | -240 | 30 | 30 | 94.37409 | 98.07461 | -3.70052 |
| 4 | 0.3 | -240 | 30 | 30 | 152.7543 | 155.031 | -2.27663 |
| 3.4 | 0.3 | -240 | 30 | 60 | 226.7173 | 235.3106 | -8.59331 |
| 3.55 | 0.3 | -240 | 30 | 60 | 128.3927 | 133.5691 | -5.17642 |
| 3.7 | 0.3 | -240 | 30 | 60 | 116.541 | 119.2258 | -2.68473 |
| 3.85 | 0.3 | -240 | 30 | 60 | 149.9012 | 150.0776 | -0.17642 |
| 4 | 0.3 | -240 | 30 | 60 | 203.8919 | 200.714 | 3.17796 |
| 3.4 | 0.3 | -240 | 30 | 90 | 213.9878 | 221.1134 | -7.12559 |
| 3.55 | 0.3 | -240 | 30 | 90 | 134.7574 | 135.5743 | -0.8169 |
| 3.7 | 0.3 | -240 | 30 | 90 | 131.6848 | 132.0672 | -0.38241 |
| 3.85 | 0.3 | -240 | 30 | 90 | 168.1176 | 168.7251 | -0.60748 |
| 4 | 0.3 | -240 | 30 | 90 | 222.5473 | 220.3606 | 2.18663 |
| 3.4 | 0.3 | -240 | 60 | 0 | 226.9368 | 213.5249 | 13.41186 |
| 3.55 | 0.3 | -240 | 60 | 0 | 70.23188 | 65.03385 | 5.19803 |
| 3.7 | 0.3 | -240 | 60 | 0 | 23.70326 | 18.44111 | 5.26215 |
| 3.85 | 0.3 | -240 | 60 | 0 | 40.16386 | 33.01932 | 7.14454 |
| 4 | 0.3 | -240 | 60 | 0 | 89.32617 | 84.33822 | 4.98795 |
| 3.4 | 0.3 | -240 | 60 | 30 | 251.7374 | 231.5898 | 20.14758 |
| 3.55 | 0.3 | -240 | 60 | 30 | 104.9089 | 99.36848 | 5.54039 |
| 3.7 | 0.3 | -240 | 60 | 30 | 66.28134 | 64.47858 | 1.80276 |
| 3.85 | 0.3 | -240 | 60 | 30 | 87.57038 | 85.28679 | 2.28359 |
| 4 | 0.3 | -240 | 60 | 30 | 138.708 | 136.761 | 1.94694 |
| 3.4 | 0.3 | -240 | 60 | 60 | 211.3541 | 198.461 | 12.89306 |
| 3.55 | 0.3 | -240 | 60 | 60 | 126.1979 | 117.708 | 8.4899 |
| 3.7 | 0.3 | -240 | 60 | 60 | 122.0279 | 117.4779 | 4.55 |
| 3.85 | 0.3 | -240 | 60 | 60 | 159.1191 | 156.7413 | 2.37781 |
| 4 | 0.3 | -240 | 60 | 60 | 214.6462 | 210.8674 | 3.77881 |
| 3.4 | 0.3 | -240 | 60 | 90 | 157.5828 | 147.2673 | 10.3155 |
| 3.55 | 0.3 | -240 | 60 | 90 | 108.6399 | 101.7129 | 6.92704 |
| 3.7 | 0.3 | -240 | 60 | 90 | 123.3447 | 124.4398 | -1.09501 |
| 3.85 | 0.3 | -240 | 60 | 90 | 170.7513 | 175.9283 | -5.17708 |
| 4 | 0.3 | -240 | 60 | 90 | 231.5457 | 232.5509 | -1.0052 |
| 3.4 | 0.3 | -240 | 90 | 0 | 259.858 | 259.9803 | -0.12232 |
| 3.55 | 0.3 | -240 | 90 | 0 | 129.2706 | 135.8262 | -6.55565 |
| 3.7 | 0.3 | -240 | 90 | 0 | 99.64148 | 105.624 | -5.98248 |
| 3.85 | 0.3 | -240 | 90 | 0 | 124.8811 | 126.4606 | -1.57952 |
| 4 | 0.3 | -240 | 90 | 0 | 176.0187 | 172.4538 | 3.56484 |
| 3.4 | 0.3 | -240 | 90 | 30 | 236.3742 | 220.7206 | 15.65357 |
| 3.55 | 0.3 | -240 | 90 | 30 | 127.0758 | 117.3547 | 9.7211 |
| 3.7 | 0.3 | -240 | 90 | 30 | 110.1763 | 103.5096 | 6.66664 |
| 3.85 | 0.3 | -240 | 90 | 30 | 141.7806 | 137.6671 | 4.11348 |
| 4 | 0.3 | -240 | 90 | 30 | 195.7714 | 194.8716 | 0.89975 |
| 3.4 | 0.3 | -240 | 90 | 60 | 131.9043 | 141.32 | -9.41576 |
| 3.55 | 0.3 | -240 | 90 | 60 | 68.47608 | 67.57599 | 0.90009 |
| 3.7 | 0.3 | -240 | 90 | 60 | 77.47454 | 74.49072 | 2.98382 |
| 3.85 | 0.3 | -240 | 90 | 60 | 123.3447 | 123.3355 | 0.00922 |
| 4 | 0.3 | -240 | 90 | 60 | 185.895 | 191.0081 | -5.11304 |
| 3.4 | 0.3 | -240 | 90 | 90 | 85.15616 | 101.1791 | -16.0229 |
| 3.55 | 0.3 | -240 | 90 | 90 | 28.97065 | 36.26877 | -7.29812 |
| 3.7 | 0.3 | -240 | 90 | 90 | 43.67545 | 47.58616 | -3.91071 |
| 3.85 | 0.3 | -240 | 90 | 90 | 94.37409 | 97.79737 | -3.42328 |
| 4 | 0.3 | -240 | 90 | 90 | 160.436 | 164.7267 | -4.29072 |
| 3.4 | 0.3 | -240 | 54.7 | 0 | 205.2088 | 196.6288 | 8.58003 |
| 3.55 | 0.3 | -240 | 54.7 | 0 | 57.0634 | 53.23807 | 3.82533 |
| 3.7 | 0.3 | -240 | 54.7 | 0 | 15.80217 | 10.2074 | 5.59477 |
| 3.85 | 0.3 | -240 | 54.7 | 0 | 34.89647 | 27.41729 | 7.47918 |
| 4 | 0.3 | -240 | 54.7 | 0 | 85.59511 | 80.84142 | 4.75369 |
| 3.4 | 0.3 | -240 | 54.7 | 90 | 171.4097 | 164.139 | 7.27072 |
| 3.55 | 0.3 | -240 | 54.7 | 90 | 117.6384 | 113.1522 | 4.48625 |
| 3.7 | 0.3 | -240 | 54.7 | 90 | 129.2706 | 131.9849 | -2.71433 |
| 3.85 | 0.3 | -240 | 54.7 | 90 | 174.4823 | 180.5097 | -6.02741 |
| 4 | 0.3 | -240 | 54.7 | 90 | 234.1794 | 234.6951 | -0.51563 |
| 3.4 | 0.3 | -240 | 90 | 45 | 189.4066 | 181.1672 | 8.23942 |
| 3.55 | 0.3 | -240 | 90 | 45 | 106.2257 | 94.60465 | 11.62107 |
| 3.7 | 0.3 | -240 | 90 | 45 | 102.9336 | 93.13187 | 9.80173 |
| 3.85 | 0.3 | -240 | 90 | 45 | 138.708 | 136.6255 | 2.08252 |
| 4 | 0.3 | -240 | 90 | 45 | 197.9661 | 201.0564 | -3.09026 |
| 3.4 | 0.6 | 0 | 30 | 0 | 244.2753 | 255.8837 | -11.6084 |
| 3.55 | 0.6 | 0 | 30 | 0 | 110.8347 | 123.3378 | -12.5031 |
| 3.7 | 0.6 | 0 | 30 | 0 | 78.13297 | 87.10663 | -8.97366 |
| 3.85 | 0.6 | 0 | 30 | 0 | 101.3973 | 106.5549 | -5.1576 |
| 4 | 0.6 | 0 | 30 | 0 | 151.8764 | 157.2414 | -5.36494 |
| 3.4 | 0.6 | 0 | 30 | 30 | 93.05724 | 110.1785 | -17.1212 |
| 3.55 | 0.6 | 0 | 30 | 30 | 36.21331 | 42.31905 | -6.10574 |
| 3.7 | 0.6 | 0 | 30 | 30 | 48.72337 | 51.12646 | -2.40309 |
| 3.85 | 0.6 | 0 | 30 | 30 | 97.22726 | 100.797 | -3.56977 |
| 4 | 0.6 | 0 | 30 | 30 | 161.5333 | 170.0995 | -8.56621 |
| 3.4 | 0.6 | 0 | 30 | 60 | 98.98306 | 93.88751 | 5.09555 |
| 3.55 | 0.6 | 0 | 30 | 60 | 63.42817 | 52.04061 | 11.38756 |
| 3.7 | 0.6 | 0 | 30 | 60 | 87.13143 | 78.26388 | 8.86755 |
| 3.85 | 0.6 | 0 | 30 | 60 | 140.0248 | 136.7536 | 3.27117 |
| 4 | 0.6 | 0 | 30 | 60 | 204.7698 | 206.2787 | -1.50886 |
| 3.4 | 0.6 | 0 | 30 | 90 | 229.7899 | 223.3017 | 6.48822 |
| 3.55 | 0.6 | 0 | 30 | 90 | 151.218 | 142.7809 | 8.43712 |
| 3.7 | 0.6 | 0 | 30 | 90 | 147.9259 | 141.3815 | 6.54444 |
| 3.85 | 0.6 | 0 | 30 | 90 | 183.7003 | 178.4681 | 5.23216 |
| 4 | 0.6 | 0 | 30 | 90 | 228.0341 | 229.5997 | -1.56554 |
| 3.4 | 0.6 | 0 | 60 | 0 | 283.5612 | 268.1703 | 15.39092 |
| 3.55 | 0.6 | 0 | 60 | 0 | 114.7852 | 112.5971 | 2.18812 |
| 3.7 | 0.6 | 0 | 60 | 0 | 59.25815 | 59.63182 | -0.37367 |
| 3.85 | 0.6 | 0 | 60 | 0 | 68.91503 | 68.63914 | 0.27589 |
| 4 | 0.6 | 0 | 60 | 0 | 112.5905 | 115.1779 | -2.58742 |
| 3.4 | 0.6 | 0 | 60 | 30 | 91.30145 | 116.2316 | -24.9302 |
| 3.55 | 0.6 | 0 | 60 | 30 | 26.99538 | 37.85472 | -10.8593 |
| 3.7 | 0.6 | 0 | 60 | 30 | 34.67699 | 39.29126 | -4.61427 |
| 3.85 | 0.6 | 0 | 60 | 30 | 80.32771 | 84.73757 | -4.40986 |
| 4 | 0.6 | 0 | 60 | 30 | 143.5364 | 152.9624 | -9.42602 |
| 3.4 | 0.6 | 0 | 60 | 60 | 105.1284 | 88.01481 | 17.11354 |
| 3.55 | 0.6 | 0 | 60 | 60 | 73.30453 | 54.69294 | 18.61159 |
| 3.7 | 0.6 | 0 | 60 | 60 | 98.76358 | 86.29464 | 12.46894 |
| 3.85 | 0.6 | 0 | 60 | 60 | 152.0959 | 147.0163 | 5.07966 |
| 4 | 0.6 | 0 | 60 | 60 | 216.6215 | 215.6266 | 0.99491 |
| 3.4 | 0.6 | 0 | 60 | 90 | 204.9893 | 211.7367 | -6.7474 |
| 3.55 | 0.6 | 0 | 60 | 90 | 144.6338 | 146.2736 | -1.63978 |
| 3.7 | 0.6 | 0 | 60 | 90 | 150.7791 | 153.6386 | -2.85952 |
| 3.85 | 0.6 | 0 | 60 | 90 | 191.6014 | 193.1965 | -1.59516 |
| 4 | 0.6 | 0 | 60 | 90 | 247.3479 | 240.5062 | 6.84175 |
| 3.4 | 0.6 | 0 | 90 | 0 | 223.6447 | 239.728 | -16.0834 |
| 3.55 | 0.6 | 0 | 90 | 0 | 119.3942 | 131.7003 | -12.3061 |
| 3.7 | 0.6 | 0 | 90 | 0 | 103.1531 | 111.3907 | -8.23766 |
| 3.85 | 0.6 | 0 | 90 | 0 | 134.3185 | 138.1639 | -3.84539 |
| 4 | 0.6 | 0 | 90 | 0 | 187.4313 | 187.5786 | -0.14726 |
| 3.4 | 0.6 | 0 | 90 | 30 | 206.3062 | 239.1868 | -32.8806 |
| 3.55 | 0.6 | 0 | 90 | 30 | 122.2474 | 137.1364 | -14.889 |
| 3.7 | 0.6 | 0 | 90 | 30 | 116.7605 | 122.804 | -6.04349 |
| 3.85 | 0.6 | 0 | 90 | 30 | 152.3154 | 155.5544 | -3.23898 |
| 4 | 0.6 | 0 | 90 | 30 | 207.1841 | 210.9463 | -3.76229 |
| 3.4 | 0.6 | 0 | 90 | 60 | 262.9306 | 239.1868 | 23.74384 |
| 3.55 | 0.6 | 0 | 90 | 60 | 151.8764 | 137.1364 | 14.74008 |
| 3.7 | 0.6 | 0 | 90 | 60 | 131.9043 | 122.804 | 9.10026 |
| 3.85 | 0.6 | 0 | 90 | 60 | 160.436 | 155.5544 | 4.88158 |
| 4 | 0.6 | 0 | 90 | 60 | 211.1346 | 210.9463 | 0.18826 |
| 3.4 | 0.6 | 0 | 90 | 90 | 223.6447 | 239.728 | -16.0834 |
| 3.55 | 0.6 | 0 | 90 | 90 | 119.3942 | 131.7003 | -12.3061 |
| 3.7 | 0.6 | 0 | 90 | 90 | 103.1531 | 111.3907 | -8.23766 |
| 3.85 | 0.6 | 0 | 90 | 90 | 134.3185 | 138.1639 | -3.84539 |
| 4 | 0.6 | 0 | 90 | 90 | 187.4313 | 187.5786 | -0.14726 |
| 3.4 | 0.6 | 0 | 54.7 | 0 | 285.317 | 268.9302 | 16.38678 |
| 3.55 | 0.6 | 0 | 54.7 | 0 | 114.7852 | 112.0016 | 2.78363 |
| 3.7 | 0.6 | 0 | 54.7 | 0 | 58.16078 | 58.07395 | 0.08683 |
| 3.85 | 0.6 | 0 | 54.7 | 0 | 67.15924 | 66.51199 | 0.64725 |
| 4 | 0.6 | 0 | 54.7 | 0 | 110.6152 | 112.8745 | -2.25933 |
| 3.4 | 0.6 | 0 | 54.7 | 90 | 205.8672 | 211.0068 | -5.13964 |
| 3.55 | 0.6 | 0 | 54.7 | 90 | 145.5117 | 146.5671 | -1.0554 |
| 3.7 | 0.6 | 0 | 54.7 | 90 | 151.8764 | 154.5624 | -2.68598 |
| 3.85 | 0.6 | 0 | 54.7 | 90 | 192.6987 | 194.3576 | -1.65885 |
| 4 | 0.6 | 0 | 54.7 | 90 | 248.6648 | 241.5114 | 7.15338 |
| 3.4 | 0.6 | 0 | 90 | 45 | 239.4468 | 239.0064 | 0.44046 |
| 3.55 | 0.6 | 0 | 90 | 45 | 144.6338 | 138.9484 | 5.68541 |
| 3.7 | 0.6 | 0 | 90 | 45 | 132.5627 | 126.6084 | 5.95426 |
| 3.85 | 0.6 | 0 | 90 | 45 | 163.9476 | 161.3512 | 2.59634 |
| 4 | 0.6 | 0 | 90 | 45 | 215.963 | 218.7356 | -2.77255 |
| 3.4 | 0.6 | -120 | 30 | 0 | 387.5922 | 355.1344 | 32.45779 |
| 3.55 | 0.6 | -120 | 30 | 0 | 191.1624 | 185.5612 | 5.60121 |
| 3.7 | 0.6 | -120 | 30 | 0 | 121.5889 | 123.3803 | -1.79131 |
| 3.85 | 0.6 | -120 | 30 | 0 | 123.5642 | 124.4694 | -0.90517 |
| 4 | 0.6 | -120 | 30 | 0 | 162.1918 | 162.0708 | 0.12091 |
| 3.4 | 0.6 | -120 | 30 | 30 | 410.637 | 366.0927 | 44.54438 |
| 3.55 | 0.6 | -120 | 30 | 30 | 216.1825 | 202.7597 | 13.42286 |
| 3.7 | 0.6 | -120 | 30 | 30 | 147.9259 | 144.6566 | 3.26932 |
| 3.85 | 0.6 | -120 | 30 | 30 | 150.1207 | 146.9889 | 3.13177 |
| 4 | 0.6 | -120 | 30 | 30 | 187.8703 | 182.5521 | 5.31817 |
| 3.4 | 0.6 | -120 | 30 | 60 | 282.9028 | 250.5509 | 32.35186 |
| 3.55 | 0.6 | -120 | 30 | 60 | 168.337 | 150.2578 | 18.07923 |
| 3.7 | 0.6 | -120 | 30 | 60 | 146.1701 | 135.5204 | 10.64973 |
| 3.85 | 0.6 | -120 | 30 | 60 | 172.7265 | 165.031 | 7.69555 |
| 4 | 0.6 | -120 | 30 | 60 | 221.4499 | 213.9018 | 7.5481 |
| 3.4 | 0.6 | -120 | 30 | 90 | 153.8517 | 124.051 | 29.80074 |
| 3.55 | 0.6 | -120 | 30 | 90 | 106.2257 | 80.5575 | 25.66822 |
| 3.7 | 0.6 | -120 | 30 | 90 | 121.3695 | 105.1078 | 16.26163 |
| 3.85 | 0.6 | -120 | 30 | 90 | 168.1176 | 160.5536 | 7.56396 |
| 4 | 0.6 | -120 | 30 | 90 | 228.0341 | 224.7702 | 3.26392 |
| 3.4 | 0.6 | -120 | 60 | 0 | 242.0805 | 233.7888 | 8.29168 |
| 3.55 | 0.6 | -120 | 60 | 0 | 91.95987 | 91.0423 | 0.91757 |
| 3.7 | 0.6 | -120 | 60 | 0 | 47.18705 | 47.06628 | 0.12077 |
| 3.85 | 0.6 | -120 | 60 | 0 | 62.76974 | 62.43337 | 0.33637 |
| 4 | 0.6 | -120 | 60 | 0 | 112.5905 | 113.5049 | -0.91445 |
| 3.4 | 0.6 | -120 | 60 | 30 | 301.9971 | 305.3297 | -3.33257 |
| 3.55 | 0.6 | -120 | 60 | 30 | 145.9506 | 156.4062 | -10.4556 |
| 3.7 | 0.6 | -120 | 60 | 30 | 99.86096 | 108.4018 | -8.54085 |
| 3.85 | 0.6 | -120 | 60 | 30 | 114.7852 | 118.8693 | -4.08406 |
| 4 | 0.6 | -120 | 60 | 30 | 160.6554 | 162.1638 | -1.50836 |
| 3.4 | 0.6 | -120 | 60 | 60 | 280.4886 | 311.4943 | -31.0058 |
| 3.55 | 0.6 | -120 | 60 | 60 | 177.555 | 194.7993 | -17.2443 |
| 3.7 | 0.6 | -120 | 60 | 60 | 159.5581 | 167.9707 | -8.41268 |
| 3.85 | 0.6 | -120 | 60 | 60 | 186.334 | 187.3537 | -1.01978 |
| 4 | 0.6 | -120 | 60 | 60 | 234.3989 | 226.5009 | 7.89802 |
| 3.4 | 0.6 | -120 | 60 | 90 | 233.3015 | 246.1182 | -12.8166 |
| 3.55 | 0.6 | -120 | 60 | 90 | 161.7528 | 167.8284 | -6.07557 |
| 3.7 | 0.6 | -120 | 60 | 90 | 161.3139 | 166.2041 | -4.89029 |
| 3.85 | 0.6 | -120 | 60 | 90 | 191.6014 | 199.4023 | -7.80092 |
| 4 | 0.6 | -120 | 60 | 90 | 247.3479 | 242.1791 | 5.16878 |
| 3.4 | 0.6 | -120 | 90 | 0 | 78.35244 | 80.9268 | -2.57436 |
| 3.55 | 0.6 | -120 | 90 | 0 | 35.99384 | 32.14291 | 3.85093 |
| 3.7 | 0.6 | -120 | 90 | 0 | 56.62445 | 53.35293 | 3.27152 |
| 3.85 | 0.6 | -120 | 90 | 0 | 109.0789 | 109.5007 | -0.42177 |
| 4 | 0.6 | -120 | 90 | 0 | 174.9213 | 179.8515 | -4.93018 |
| 3.4 | 0.6 | -120 | 90 | 30 | 161.7528 | 159.7862 | 1.96663 |
| 3.55 | 0.6 | -120 | 90 | 30 | 94.37409 | 87.35764 | 7.01645 |
| 3.7 | 0.6 | -120 | 90 | 30 | 99.42201 | 93.7851 | 5.63691 |
| 3.85 | 0.6 | -120 | 90 | 30 | 142.0001 | 141.2228 | 0.77732 |
| 4 | 0.6 | -120 | 90 | 30 | 201.0388 | 207.0828 | -6.04401 |
| 3.4 | 0.6 | -120 | 90 | 60 | 283.7807 | 318.5874 | -34.8067 |
| 3.55 | 0.6 | -120 | 90 | 60 | 165.4839 | 186.9151 | -21.4312 |
| 3.7 | 0.6 | -120 | 90 | 60 | 140.4638 | 151.8229 | -11.3591 |
| 3.85 | 0.6 | -120 | 90 | 60 | 165.0449 | 169.886 | -4.84105 |
| 4 | 0.6 | -120 | 90 | 60 | 213.5488 | 214.8099 | -1.26109 |
| 3.4 | 0.6 | -120 | 90 | 90 | 389.348 | 398.5292 | -9.18119 |
| 3.55 | 0.6 | -120 | 90 | 90 | 213.7683 | 231.2578 | -17.4895 |
| 3.7 | 0.6 | -120 | 90 | 90 | 155.6075 | 169.4285 | -13.821 |
| 3.85 | 0.6 | -120 | 90 | 90 | 162.4112 | 166.8271 | -4.41585 |
| 4 | 0.6 | -120 | 90 | 90 | 201.6972 | 195.3057 | 6.39146 |
| 3.4 | 0.6 | -120 | 54.7 | 0 | 285.5365 | 269.1581 | 16.37838 |
| 3.55 | 0.6 | -120 | 54.7 | 0 | 115.0047 | 112.1445 | 2.86024 |
| 3.7 | 0.6 | -120 | 54.7 | 0 | 58.38025 | 58.15723 | 0.22302 |
| 3.85 | 0.6 | -120 | 54.7 | 0 | 67.15924 | 66.55312 | 0.60612 |
| 4 | 0.6 | -120 | 54.7 | 0 | 110.8347 | 112.8856 | -2.05095 |
| 3.4 | 0.6 | -120 | 54.7 | 90 | 206.7451 | 210.779 | -4.03385 |
| 3.55 | 0.6 | -120 | 54.7 | 90 | 146.3896 | 146.4242 | -0.03464 |
| 3.7 | 0.6 | -120 | 54.7 | 90 | 152.5349 | 154.4791 | -1.94427 |
| 3.85 | 0.6 | -120 | 54.7 | 90 | 193.3572 | 194.3164 | -0.95929 |
| 4 | 0.6 | -120 | 54.7 | 90 | 249.1037 | 241.5003 | 7.60342 |
| 3.4 | 0.6 | -120 | 90 | 45 | 224.0836 | 239.0064 | -14.9228 |
| 3.55 | 0.6 | -120 | 90 | 45 | 135.6353 | 138.9484 | -3.31305 |
| 3.7 | 0.6 | -120 | 90 | 45 | 127.0758 | 126.6084 | 0.4674 |
| 3.85 | 0.6 | -120 | 90 | 45 | 160.436 | 161.3512 | -0.91525 |
| 4 | 0.6 | -120 | 90 | 45 | 213.5488 | 218.7356 | -5.18677 |
| 3.4 | 0.6 | -240 | 30 | 0 | 127.7342 | 156.6329 | -28.8987 |
| 3.55 | 0.6 | -240 | 30 | 0 | 46.52862 | 61.1144 | -14.5858 |
| 3.7 | 0.6 | -240 | 30 | 0 | 44.1144 | 50.83301 | -6.71861 |
| 3.85 | 0.6 | -240 | 30 | 0 | 84.05878 | 88.64037 | -4.58159 |
| 4 | 0.6 | -240 | 30 | 0 | 143.9754 | 152.4119 | -8.43656 |
| 3.4 | 0.6 | -240 | 30 | 30 | 242.0805 | 266.8419 | -24.7614 |
| 3.55 | 0.6 | -240 | 30 | 30 | 121.5889 | 140.5363 | -18.9473 |
| 3.7 | 0.6 | -240 | 30 | 30 | 96.34936 | 108.383 | -12.0336 |
| 3.85 | 0.6 | -240 | 30 | 30 | 123.1253 | 129.0744 | -5.94911 |
| 4 | 0.6 | -240 | 30 | 30 | 174.7018 | 177.7227 | -3.02085 |
| 3.4 | 0.6 | -240 | 30 | 60 | 320.6524 | 349.8017 | -29.1492 |
| 3.55 | 0.6 | -240 | 30 | 60 | 192.4793 | 212.4812 | -20.002 |
| 3.7 | 0.6 | -240 | 30 | 60 | 160.6554 | 171.794 | -11.1386 |
| 3.85 | 0.6 | -240 | 30 | 60 | 180.8471 | 182.9455 | -2.0984 |
| 4 | 0.6 | -240 | 30 | 60 | 225.8394 | 218.7313 | 7.10813 |
| 3.4 | 0.6 | -240 | 30 | 90 | 284.2197 | 322.5525 | -38.3328 |
| 3.55 | 0.6 | -240 | 30 | 90 | 184.1392 | 205.0043 | -20.8651 |
| 3.7 | 0.6 | -240 | 30 | 90 | 167.0202 | 177.6551 | -10.6349 |
| 3.85 | 0.6 | -240 | 30 | 90 | 193.5766 | 196.3826 | -2.80599 |
| 4 | 0.6 | -240 | 30 | 90 | 241.2026 | 234.4291 | 6.77348 |
| 3.4 | 0.6 | -240 | 60 | 0 | 325.0419 | 302.5518 | 22.49016 |
| 3.55 | 0.6 | -240 | 60 | 0 | 137.8301 | 134.1519 | 3.67814 |
| 3.7 | 0.6 | -240 | 60 | 0 | 71.54873 | 72.19738 | -0.64865 |
| 3.85 | 0.6 | -240 | 60 | 0 | 74.84085 | 74.84491 | -0.00406 |
| 4 | 0.6 | -240 | 60 | 0 | 115.4437 | 116.8509 | -1.40723 |
| 3.4 | 0.6 | -240 | 60 | 30 | 387.8117 | 339.7111 | 48.10055 |
| 3.55 | 0.6 | -240 | 60 | 30 | 193.3572 | 177.961 | 15.39612 |
| 3.7 | 0.6 | -240 | 60 | 30 | 124.8811 | 120.9674 | 3.91371 |
| 3.85 | 0.6 | -240 | 60 | 30 | 127.0758 | 125.0751 | 2.00075 |
| 4 | 0.6 | -240 | 60 | 30 | 165.7034 | 163.8368 | 1.86658 |
| 3.4 | 0.6 | -240 | 60 | 60 | 296.2908 | 277.1129 | 19.17789 |
| 3.55 | 0.6 | -240 | 60 | 60 | 183.9197 | 173.2444 | 10.67531 |
| 3.7 | 0.6 | -240 | 60 | 60 | 162.1918 | 155.4052 | 6.78657 |
| 3.85 | 0.6 | -240 | 60 | 60 | 187.6508 | 181.148 | 6.50283 |
| 4 | 0.6 | -240 | 60 | 60 | 235.0573 | 224.8279 | 10.22942 |
| 3.4 | 0.6 | -240 | 60 | 90 | 182.6029 | 177.3552 | 5.24765 |
| 3.55 | 0.6 | -240 | 60 | 90 | 131.0264 | 124.7187 | 6.30761 |
| 3.7 | 0.6 | -240 | 60 | 90 | 142.878 | 141.073 | 1.80495 |
| 3.85 | 0.6 | -240 | 60 | 90 | 187.2119 | 186.9907 | 0.22112 |
| 4 | 0.6 | -240 | 60 | 90 | 245.3726 | 238.8332 | 6.53945 |
| 3.4 | 0.6 | -240 | 90 | 0 | 389.348 | 398.5292 | -9.18119 |
| 3.55 | 0.6 | -240 | 90 | 0 | 213.7683 | 231.2578 | -17.4895 |
| 3.7 | 0.6 | -240 | 90 | 0 | 155.6075 | 169.4285 | -13.821 |
| 3.85 | 0.6 | -240 | 90 | 0 | 162.4112 | 166.8271 | -4.41585 |
| 4 | 0.6 | -240 | 90 | 0 | 201.6972 | 195.3057 | 6.39146 |
| 3.4 | 0.6 | -240 | 90 | 30 | 343.6973 | 318.5874 | 25.10991 |
| 3.55 | 0.6 | -240 | 90 | 30 | 198.4051 | 186.9151 | 11.48999 |
| 3.7 | 0.6 | -240 | 90 | 30 | 158.8996 | 151.8229 | 7.07674 |
| 3.85 | 0.6 | -240 | 90 | 30 | 176.0187 | 169.886 | 6.13268 |
| 4 | 0.6 | -240 | 90 | 30 | 220.1331 | 214.8099 | 5.32315 |
| 3.4 | 0.6 | -240 | 90 | 60 | 154.7296 | 159.7862 | -5.05656 |
| 3.55 | 0.6 | -240 | 90 | 60 | 91.95987 | 87.35764 | 4.60223 |
| 3.7 | 0.6 | -240 | 90 | 60 | 99.42201 | 93.7851 | 5.63691 |
| 3.85 | 0.6 | -240 | 90 | 60 | 143.0975 | 141.2228 | 1.87469 |
| 4 | 0.6 | -240 | 90 | 60 | 203.014 | 207.0828 | -4.06874 |
| 3.4 | 0.6 | -240 | 90 | 90 | 78.35244 | 80.9268 | -2.57436 |
| 3.55 | 0.6 | -240 | 90 | 90 | 35.99384 | 32.14291 | 3.85093 |
| 3.7 | 0.6 | -240 | 90 | 90 | 56.62445 | 53.35293 | 3.27152 |
| 3.85 | 0.6 | -240 | 90 | 90 | 109.0789 | 109.5007 | -0.42177 |
| 4 | 0.6 | -240 | 90 | 90 | 174.9213 | 179.8515 | -4.93018 |
| 3.4 | 0.6 | -240 | 54.7 | 0 | 285.5365 | 268.7024 | 16.83414 |
| 3.55 | 0.6 | -240 | 54.7 | 0 | 115.0047 | 111.8587 | 3.14597 |
| 3.7 | 0.6 | -240 | 54.7 | 0 | 58.38025 | 57.99066 | 0.38959 |
| 3.85 | 0.6 | -240 | 54.7 | 0 | 67.15924 | 66.47086 | 0.68838 |
| 4 | 0.6 | -240 | 54.7 | 0 | 110.8347 | 112.8635 | -2.02877 |
| 3.4 | 0.6 | -240 | 54.7 | 90 | 206.5256 | 211.2347 | -4.70909 |
| 3.55 | 0.6 | -240 | 54.7 | 90 | 146.1701 | 146.71 | -0.53985 |
| 3.7 | 0.6 | -240 | 54.7 | 90 | 152.5349 | 154.6457 | -2.11084 |
| 3.85 | 0.6 | -240 | 54.7 | 90 | 193.1377 | 194.3987 | -1.26103 |
| 4 | 0.6 | -240 | 54.7 | 90 | 248.8842 | 241.5225 | 7.36177 |
| 3.4 | 0.6 | -240 | 90 | 45 | 253.0543 | 239.0064 | 14.04789 |
| 3.55 | 0.6 | -240 | 90 | 45 | 152.3154 | 138.9484 | 13.36703 |
| 3.7 | 0.6 | -240 | 90 | 45 | 137.6106 | 126.6084 | 11.00218 |
| 3.85 | 0.6 | -240 | 90 | 45 | 167.6786 | 161.3512 | 6.32741 |
| 4 | 0.6 | -240 | 90 | 45 | 218.8162 | 218.7356 | 0.08062 |