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TABLES OF EXTENDED DISTANCES FOR PPP, pPP, pPKP AND FOR P AT VERY SHORT DISTANCES

BY

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ABSTRACT

The paper presents tables of extended distances for several secondary phases which are occasionally useful in fault-plane solutions, and extends earlier tables for P to very short distances. The tables are given for surface focus and for focal depths ranging from 0·00R to 0·12R in steps of 0·01R. They are consistent with earlier tables of extended distances so that the several phases can be used in a single solution.

INTRODUCTION

In recent years this Observatory has carried out a program to determine the direction of faulting in large earthquakes. The solutions are based on direction of motion data supplied by co-operating stations through the medium of questionnaires. Collaborators are urged to supply direction of motion data not only for the first phase but also for secondary P phases where the direction of motion can be read with confidence. Tables of extended distances for the secondary phases PcP, PP and pP have already been published[1,2]. The present paper presents tables of extended distances for some other secondary phases which have been reported frequently enough to suggest that the tables would be of value.

Earlier tables of extended distances for P[3] were left incomplete at very short distances pending the completion of tables of extended distances for PKP. The missing entries are obtained automatically in the course of obtaining extended distances for pPKP and are presented in tabular form.

DERIVATION OF THE TABLES

There is one important basic principle underlying the derivation of these tables It has been discussed in earlier papers, but will bear repetition. In Figure 1, F is supposed to represent the focus of an earthquake. The technique of deriving tables of extended

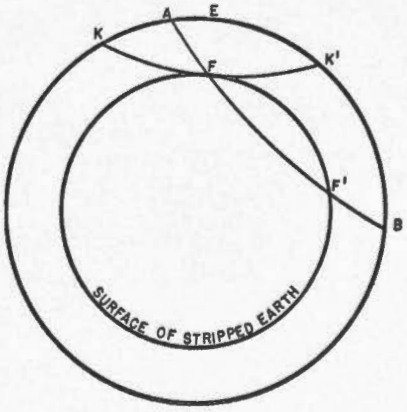


Figure 1.

[1] J. H. Hodgson and J. F. J. Allen, "Tables of Extended Distances for PKP and PcP", *Publications of the Dominion Observatory*, Vol. XVI, No. 10, 1954.

[2] J. H. Hodgson and J. F. J. Allen, "Tables of Extended Distances for PP and pP", *Publications of the Dominion Observatory*, Vol. XVI, No. 11, 1954.

[3] J. H. Hodgson and R. S. Storey, "Tables Extending Byerly's Fault-Plane Techniques to Earthquakes of Any Focal Depth", *Bull. Seism. Soc. Am.*, 43, 49-61, 1953.

distances for deep-focus earthquakes has been to strip the earth to the depth of focus. Stations such as A, lying in the zone KK′ and receiving their impulse from an upward rising ray, are thus lost to analysis.

In an earlier paper[3] it was shown that if AFB is a continuous ray, such that an earthquake at A would give rise to the ray AFB, then the point A and the point B would receive the same initial impulse, either both compressions, or both dilatations. Thus information obtained at a station A in the stripped zone need not be lost but may be used to infer the motion at F′, the stripped earth equivalent of the point B. A and B are, of course, at exactly opposite azimuths, so that the extended distances of points such as A were given as equal to the extended distance of their related point F′ but with a negative sign.

The tables[3] of extended distances for P may thus be used to obtain sets of related points, that is pairs of epicentral distances whose extended distances are equal in magnitude but opposite in sign. For example the extended distance at 0·12R for 4° is −1·341. By interpolation, the extended distance for 76°.1 is +1·341. 4° and 76°.1 are related distances.

Now refer to Figure 2, in which A and B are related points, so that the extended distance of A is the negative of the extended distance of B. The ray FB gives rise, by reflection, to a PP ray emergent at C and to a PPP ray emergent at D. Since extended distance is a function only of the angle at which the generating ray leaves the focus, all these rays will have the same extended distance. Similarly a P phase recorded at A, a pP ray recorded at E and a pPP ray recorded at G will all have the same value, but with a negative sign.

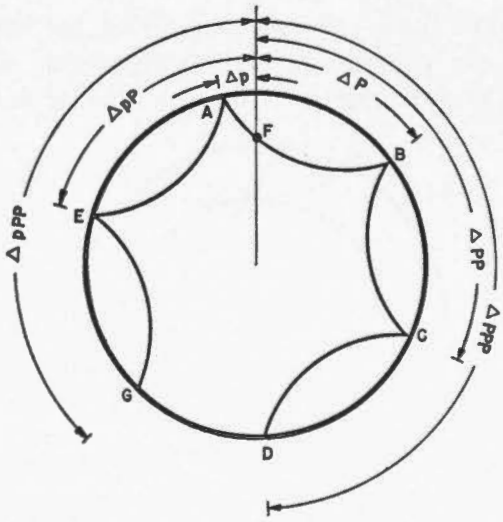


FIGURE 2.

By examination of the figure, and in the notation there defined, we have

$$\triangle PPP = 3\triangle P + 2\triangle p, \tag{1}$$

$$\triangle pPP = 2\triangle P + 3\triangle p. \tag{2}$$

By putting a pair of related values $\triangle$P and $\triangle$p into these equations we will obtain values of $\triangle$PPP and $\triangle$pPP having numerically the same extended distance. For example, we have already seen that, for a focal depth of O.12R, 4° and 76°.1 are related points with extended distance 1·341. Then

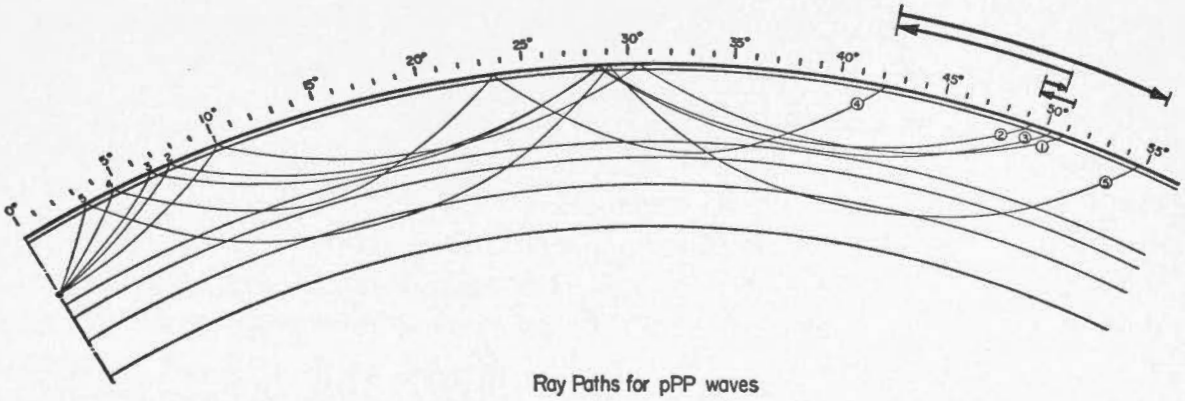
$$\triangle PPP = 3(76^\circ.1) + 2(4^\circ.0) = 236^\circ.3,$$
$$\triangle pPP = 2(76^\circ.1) + 3(4^\circ.0) = 164^\circ.2,$$

so that the extended distance of PPP at 236°.3 is 1·341 while that of pPP at 164°.2 is −1·341.

By taking a number of pairs of related points, one rapidly obtains corresponding values of $\triangle$PPP and $\triangle$pPP. By plotting these against extended distance and reading off at even values of $\triangle$, the required tables are obtained.

Table I (pages 89 to 92) gives extended distances for PPP, while Table II (pages 93 to 96) gives those for pPP.

In an earlier paper[2] in which extended distances were given for PP and pP, it was found that the extended distances for pP did not approach zero smoothly. This was found to be due to a complicated cusp arrangement on pP. This cusp has since been demonstrated graphically by one of us[4] and has been discussed analytically by Bullen[5]. An analagous cusp of course exists on pPP, and again prevents a smooth approach to zero. As an example, the ray diagram is shown in Figure 3 for a focal depth of 0·05R. The double cusp is clearly shown. The corresponding multiple values of extended distance have not been shown in the tables since the several sections of the cusp have not been observed in practice. Only the largest value of extended distance has been given in each case.



Ray Paths for pPP waves
Focal Depth 0·05 R

FIGURE 3.

We now turn our attention to obtaining extended distances for the phase pPKP. Consider Figure 4, which shows ray paths for PKP and for pPKP. Once again A and B are related points, and the extended distance of a P wave emergent at A and of a pPKP

[4] P. L. Willmore and J. H. Hodgson, "Charts for Measuring Azimuth and Distance and for Tracing Seismic Rays through the Earth", Publications of the Dominion Observatory, Vol. XVI, No. 14, 1955.

[5] K. E. Bullen, "Features of Seismic pP and PP rays", *M.N.R.A.S., Geoph. Suppl., in* press.

ray emergent at C are equal to each other and to the negative of the extended distance of a PKP wave emergent at B. In the notation of the figures:

$$\triangle pPKP = \triangle PKP + 2\triangle p. \tag{3}$$

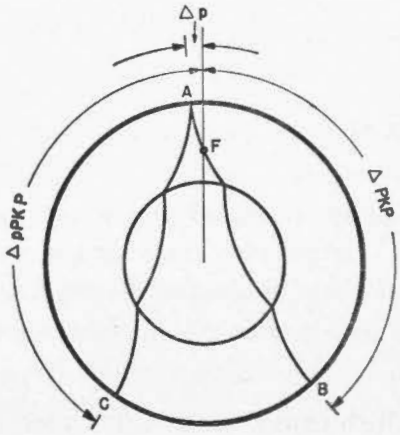


FIGURE 4.

Unfortunately the original tables of extended distances for P do not give values of $\triangle p$ corresponding to values of PKP, so that it is not possible to obtain sets of related points from those tables. However, values of $\triangle p$ were obtained in deriving the tables of extended distances for PKP, although they were given a different symbol. If the reader will refer to Figure 3 and the accompanying text of that earlier paper[1] it will be seen that the angle which is here called $\triangle p$ was there designated θ. Table II of that paper is typical of tables which were developed in that earlier work, in which values of i_d, the angle at which the ray leaves the focus of depth d, are related to values of θ_{sd}, the angle corresponding to $\triangle p$. These original tables are still available in storage and were used in the present work.

The method of procedure can probably best be illustrated by an example based on Table II of the earlier paper, although it happens to present a rather uninteresting case. That table gives values corresponding to a focal depth of 0·00R. For this focal depth and for an epicentral distance of 145°, the extended distance of PKP_2 is 3·69. Then $i_d(=i_o$ in this case) is $\cot^{-1} 3{\cdot}69$, or 15°.2. By the table, the corresponding value of θ_{so} is 0°.08. Hence $\triangle p$ = 0°.08 and $\triangle PKP_2$ = 145° are a pair of related points having the same numerical value of extended distance 3·69. By equation (3), this same value would apply to

$$\triangle pPKP_2 = 145° + 2(0{\cdot}08) = 145°.2$$

Hence, for a focal depth of 0·00R the extended distance of a P wave emergent at 0°.08 and that of a $pPKP_2$ wave emergent at 145°.2 are both −3·69. Selecting other values of $\triangle PKP$ one computes the corresponding values of $\triangle p$ and of $\triangle pPKP$ and so builds up the required tables.

Extended distances for $pPKP_1$ are given in Table III (pages 97 and 98) of $pPKP_2$ in Table IV (page 99) and for P at short distances in Table V (page 100).

TABLE I

Extended Distances for PPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
9	0·041	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	0·063	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	0·084	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	0·107	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	0·130	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	0·151	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	0·173	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	0·194	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	0·216	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	0·236	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	0·256	0·032	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	0·275	0·058	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	0·294	0·079	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	0·313	0·096	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	0·332	0·112	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	0·350	0·124	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	0·368	0·138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	0·385	0·152	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	0·403	0·165	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	0·422	0·178	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	0·440	0·192	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	0·458	0·204	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	0·476	0·216	0·035	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	0·495	0·227	0·073	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	0·504	0·239	0·103	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	0·532	0·251	0·128	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	0·549	0·263	0·149	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	0·566	0·275	0·170	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	0·583	0·286	0·187	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	0·599	0·297	0·205	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	0·615	0·309	0·220	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	0·631	0·321	0·236	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
41	0·657	0·333	0·250	0·095	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	0·663	0·345	0·263	0·130	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	0·679	0·358	0·276	0·157	.....	.....	.....	.....	.....	.....	.....	.....	.....
44	0·694	0·372	0·288	0·180	.....	.....	.....	0·025	.....	.....	.....	.....	.....
45	0·711	0·387	0·299	0·202	.....	.....	.....	0·074	.....	.....	.....	.....	.....
46	0·726	0·403	0·312	0·220	0·051	.....	.....	0·114	.....	.....	.....	.....	.....
47	0·742	0·420	0·324	0·238	0·095	.....	.....	0·142	.....	.....	.....	.....	.....
48	0·757	0·438	0·337	0·253	0·127	.....	.....	0·167	.....	.....	.....	.....	.....
49	0·772	0·456	0·352	0·268	0·155	.....	0·034	0·192	.....	.....	.....	.....	.....

TABLE I *(Continued)*

Extended Distances for PPP

Δ°	*Depth h* =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
50	0·786	0·474	0·367	0·282	0·182	.....	0·368	0·213	.....	.....	.....	.....	.....
51	0·800	0·491	0·386	0·298	0·205	.....	0·417	0·233	.....	.....	.....	.....	.....
52	0·815	0·509	0·404	0·319	0·225	0·043	0·449	0·253	.....	.....	.....	.....	.....
53	0·830	0·529	0·425	0·346	0·252	0·489	0·472	0·275	.....	.....	.....	.....	.....
54	0·845	0·548	0·449	0·375	0·321	0·538	0·495	0·295	.....	.....	.....	.....	.....
55	0·858	0·566	0·480	0·422	0·562	0·560	0·515	0·316	0·092	.....	.....	.....	.....
56	0·872	0·584	0·606	0·556	0·610	0·580	0·530	0·337	0·128	.....	.....	.....	.....
57	0·884	0·604	0·705	0·613	0·643	0·597	0·546	0·357	0·164	.....	.....	.....	.....
58	0·897	0·624	0·756	0·653	0·667	0·613	0·561	0·376	0·195	.....	.....	.....	.....
59	0·910	0·645	0·784	0·690	0·681	0·629	0·575	0·393	0·223	.....	.....	.....	.....
60	0·923	0·665	0·806	0·722	0·703	0·643	0·588	0·411	0·251	0·000	.....	.....	.....
61	0·936	0·686	0·825	0·750	0·720	0·656	0·599	0·427	0·278	0·099	.....	.....	.....
62	0·949	0·708	0·843	0·777	0·733	0·669	0·610	0·442	0·303	0·137	.....	.....	.....
63	0·962	0·729	0·859	0·800	0·748	0·681	0·621	0·458	0·324	0·176	.....	.....	.....
64	0·975	0·750	0·875	0·817	0·761	0·692	0·633	0·473	0·346	0·206	.....	.....	.....
65	0·988	0·772	0·892	0·832	0·772	0·703	0·645	0·487	0·361	0·230	.....	.....	.....
66	1·001	0·794	0·906	0·846	0·784	0·714	0·657	0·502	0·376	0·254	.....	.....	.....
67	1·009	0·816	0·923	0·858	0·795	0·724	0·668	0·517	0·392	0·277	0·111	.....	.....
68	1·017	0·838	0·934	0·870	0·806	0·734	0·679	0·530	0·408	0·295	0·163	.....	.....
69	1·026	0·860	0·947	0·881	0·815	0·744	0·690	0·541	0·422	0·312	0·191	.....	.....
70	1·034	0·882	0·958	0·892	0·824	0·754	0·701	0·553	0·436	0·327	0·218	.....	.....
71	1·043	0·904	0·969	0·902	0·833	0·764	0·710	0·564	0·449	0·343	0·235	.....	.....
72	1·051	0·925	0·981	0·912	0·842	0·773	0·719	0·575	0·459	0·357	0·252	.....	.....
73	1·060	0·947	0·993	0·922	0·849	0·783	0·727	0·587	0·471	0·369	0·267	0·083	.....
74	1·069	0·969	1·004	0·933	0·857	0·792	0·735	0·597	0·484	0·380	0·281	0·124	.....
75	1·078	0·990	1·014	0·943	0·864	0·801	0·743	0·607	0·496	0·391	0·293	0·157	.....
76	1·087	1·010	1·025	0·952	0·871	0·810	0·751	0·616	0·505	0·402	0·304	0·179	.....
77	1·096	1·031	0·034	0·962	0·876	0·818	0·759	0·625	0·515	0·412	0·315	0·197	0·039
78	1·104	1·052	1·043	0·971	0·882	0·826	0·767	0·634	0·525	0·421	0·326	0·215	0·072
79	1·113	1·073	1·052	0·979	0·887	0·834	0·774	0·643	0·534	0·430	0·336	0·233	0·103
80	1·122	1·095	1·061	0·987	0·892	0·842	0·782	0·651	0·543	0·438	0·346	0·248	0·128
81	1·131	1·116	1·069	0·995	0·897	0·851	0·789	0·659	0·552	0·448	0·355	0·261	0·151
82	1·140	1·134	1·077	1·003	0·902	0·858	0·796	0·667	0·561	0·455	0·364	0·273	0·171
83	1·149	1·153	1·086	1·010	0·907	0·865	0·803	0·675	0·569	0·462	0·372	0·285	0·192
84	1·158	1·172	1·094	1·017	0·912	0·871	0·810	0·682	0·577	0·470	0·381	0·295	0·207
85	1·166	1·189	1·102	1·024	0·917	0·878	0·817	0·690	0·584	0·477	0·389	0·304	0·220
86	1·174	1·206	1·110	1·031	0·922	0·884	0·824	0·696	0·592	0·484	0·396	0·313	0·232
87	1·183	1·223	1·118	1·038	0·928	0·890	0·831	0·702	0·598	0·491	0·403	0·321	0·243
88	1·192	1·241	1·126	1·045	0·934	0·896	0·840	0·707	0·605	0·498	0·411	0·329	0·254
89	1·201	1·256	1·134	1·051	0·939	0·901	0·848	0·712	0·611	0·505	0·418	0·337	0·264
90	1·210	1·271	1·142	1·058	0·944	0·906	0·855	0·717	0·617	0·511	0·425	0·344	0·273
91	1·219	1·286	1·149	1·064	0·949	0·911	0·861	0·722	0·622	0·517	0·431	0·352	0·282
92	1·228	1·301	1·156	1·071	0·954	0·916	0·868	0·726	0·628	0·523	0·437	0·358	0·290
93	1·236	1·317	1·163	1·077	0·959	0·921	0·874	0·730	0·634	0·528	0·443	0·365	0·298
94	1·245	1·332	1·170	1·083	0·964	0·926	0·880	0·733	0·639	0·534	0·449	0·372	0·305

TABLE I *(Continued)*

Extended Distances for PPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
95	1·253	1·347	1·176	1·089	0·968	0·931	0·886	0·736	0·645	0·540	0·455	0·378	0·313
96	1·262	1·361	1·183	1·095	0·973	0·935	0·892	0·739	0·650	0·545	0·461	0·385	0·320
97	1·271	1·373	1·189	1·101	0·978	0·940	0·898	0·742	0·655	0·549	0·467	0·391	0·328
98	1·280	1·386	1·195	1·106	0·983	0·944	0·905	0·745	0·660	0·555	0·472	0·397	0·335
99	1·289	1·399	1·201	1·113	0·988	0·948	0·910	0·747	0·665	0·560	0·477	0·403	0·343
100	1·297	1·411	1·206	1·119	0·993	0·952	0·916	0·750	0·670	0·565	0·482	0·408	0·350
101	1·306	1·423	1·212	1·125	0·999	0·956	0·921	0·752	0·675	0·570	0·487	0·413	0·357
102	1·315	1·435	1·217	1·131	1·004	0·960	0·926	0·754	0·679	0·575	0·493	0·418	0·364
103	1·323	1·448	1·223	1·137	1·010	0·963	0·932	0·755	0·684	0·579	0·498	0·423	0·371
104	1·332	1·460	1·229	1·143	1·015	0·967	0·938	0·757	0·689	0·584	0·503	0·428	0·377
105	1·341	1·472	1·235	1·149	1·021	0·971	0·944	0·759	0·693	0·589	0·508	0·433	0·383
106	1·350	1·483	1·241	1·155	1·028	0·975	0·950	0·761	0·698	0·594	0·513	0·438	0·389
107	1·359	1·494	1·247	1·161	1·034	0·978	0·955	0·763	0·703	0·599	0·518	0·443	0·396
108	1·368	1·505	1·252	1·167	1·040	0·981	0·960	0·766	0·707	0·604	0·523	0·448	0·402
109	1·377	1·515	1·258	1·172	1·046	0·984	0·965	0·769	0·711	0·609	0·528	0·453	0·407
110	1·386	1·525	1·264	1·177	1·052	0·987	0·971	0·772	0·715	0·613	0·533	0·457	0·413
111	1·394	1·534	1·270	1·183	1·059	0·990	0·976	0·775	0·719	0·618	0·537	0·462	0·418
112	1·403	1·543	1·276	1·188	1·066	0·993	0·981	0·779	0·723	0·623	0·542	0·467	0·423
113	1·412	1·552	1·282	1·193	1·071	0·996	0·986	0·782	0·727	0·628	0·547	0·472	0·429
114	1·421	1·560	1·288	1·198	1·077	0·999	0·989	0·785	0·732	0·633	0·551	0·477	0·434
115	1·430	1·569	1·294	1·203	1·083	1·002	0·992	0·789	0·736	0·637	0·556	0·482	0·440
116	1·439	1·577	1·300	1·208	1·089	1·005	0·996	0·794	0·740	0·642	0·561	0·487	0·446
117	1·448	1·585	1·306	1·213	1·096	1·008	1·000	0·800	0·744	0·647	0·565	0·492	0·451
118	1·456	1·594	1·312	1·217	1·102	1·010	1·003	0·805	0·747	0·651	0·570	0·497	0·457
119	1·465	1·601	1·318	1·222	1·108	1·013	1·006	0·812	0·751	0·656	0·574	0·501	0·462
120	1·474	1·608	1·324	1·226	1·114	1·015	1·009	0·820	0·755	0·661	0·579	0·506	0·468
121	1·482	1·613	1·329	1·231	1·121	1·018	1·012	0·826	0·758	0·666	0·584	0·511	0·473
122	1·491	1·620	1·335	1·236	1·127	1·022	1·015	0·832	0·762	0·671	0·589	0·516	0·478
123	1·500	1·626	1·342	1·241	1·134	1·026	1·017	0·839	0·766	0·676	0·594	0·522	0·484
124	1·508	1·633	1·347	1·246	1·141	1·031	1·020	0·846	0·770	0·681	0·600	0·527	0·490
125	1·517	1·640	1·353	1·251	1·148	1·035	1·023	0·852	0·774	0·686	0·605	0·532	0·495
126	1·526	1·646	1·358	1·256	1·154	1·038	1·026	0·859	0·778	0·691	0·610	0·537	0·501
127	1·534	1·652	1·365	1·261	1·161	1·042	1·030	0·866	0·783	0·696	0·616	0·543	0·507
128	1·544	1·658	1·371	1·266	1·168	1·046	1·034	0·873	0·788	0·701	0·621	0·550	0·513
129	1·552	1·664	1·377	1·271	1·175	1·051	1·037	0·879	0·793	0·706	0·627	0·556	0·519
130	1·561	1·671	1·382	1·276	1·182	1·056	1·042	0·886	0·798	0·711	0·632	0·562	0·525
131	1·570	1·678	1·388	1·281	1·188	1·061	1·046	0·892	0·803	0·716	0·638	0·568	0·531
132	1·579	1·684	1·394	1·285	1·196	1·067	1·050	0·899	0·808	0·722	0·644	0·574	0·537
133	1·587	1·691	1·400	1·290	1·202	1·073	1·055	0·906	0·814	0·727	0·650	0·580	0·543
134	1·596	1·698	1·405	1·295	1·209	1·080	1·060	0·912	0·820	0·733	0·656	0·586	0·549
135	1·604	1·704	1·412	1·300	1·216	1·086	1·065	0·919	0·826	0·738	0·662	0·592	0·556
136	1·613	1·711	1·418	1·305	1·223	1·092	1·071	0·926	0·832	0·743	0·668	0·598	0·562
137	1·622	1·717	1·424	1·310	1·229	1·099	1·077	0·932	0·838	0·749	0·675	0·605	0·568
138	1·631	1·723	1·430	1·315	1·235	1·106	1·082	0·939	0·844	0·754	0·682	0·612	0·575
139	1·640	1·730	1·436	1·319	1·242	1·113	1·088	0·946	0·850	0·760	0·688	0·618	0·582

TABLE I *(Concluded)*

Extended Distances for PPP

Δ°	*Depth h* =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
140	1·648	1·737	1·441	1·324	1·248	1·120	1·094	0·953	0·856	0·766	0·694	0·625	0·588
141	1·657	1·743	1·447	1·329	1·255	1·127	1·100	0·960	0·862	0·773	0·701	0·631	0·595
142	1·665	1·750	1·453	1·333	1·262	1·135	1·106	0·966	0·868	0·780	0·707	0·638	0·601
143	1·674	1·756	1·459	1·338	1·270	1·142	1·111	0·973	0·874	0·787	0·713	0·644	0·608
144	1·683	1·762	1·465	1·342	1·277	1·149	1·116	0·980	0·880	0·794	0·720	0·650	0·614
145	1·691	1·769	1·471	1·347	1·284	1·157	1·122	0·987	0·886	0·801	0·726	0·658	0·621
146	1·700	1·775	1·477	1·351	1·290	1·165	1·127	0·990	0·892	0·807	0·733	0·665	0·628
147	1·709	1·781	1·483	1·355	1·296	1·174	1·132	1·002	0·898	0·813	0·739	0·672	0·635
148	1·718	1·788	1·489	1·360	1·302	1·182	1·138	1·009	0·904	0·820	0·746	0·679	0·642
149	1·726	1·794	1·495	1·364	1·309	1·191	1·143	1·016	0·910	0·827	0·752	0·687	0·649
150	1·735	1·801	1·501	1·369	1·315	1·200	1·148	1·023	0·917	0·834	0·758	0·694	0·657
151	1·744	1·808	1·507	1·373	1·322	1·208	1·153	1·030	0·925	0·841	0·765	0·702	0·664
152	1·752	1·814	1·513	1·378	1·328	1·216	1·159	1·037	0·932	0·847	0·773	0·709	0·671
153	1·761	1·820	1·518	1·384	1·335	1·225	1·165	1·045	0·939	0·854	0·780	0·717	0·678
154	1·770	1·827	1·525	1·388	1·342	1·233	1·172	1·052	0·946	0·860	0·787	0·724	0·685
155	1·779	1·833	1·531	1·394	1·348	1·242	1·180	1·060	0·954	0·867	0·795	0·732	0·692
156	1·787	1·840	1·536	1·400	1·354	1·250	1·188	1·067	0·961	0·874	0·802	0·739	0·700
157	1·796	1·846	1·542	1·406	1·360	1·258	1·196	1·074	0·969	0·881	0·810	0·747	0·707
158	1·804	1·852	1·548	1·411	1·367	1·267	1·204	1·081	0·976	0·887	0·817	0·754	0·714
159	1·813	1·859	1·554	1·417	1·375	1·276	1·213	1·088	0·984	0·894	0·824	0·762	0·722
160	1·822	1·865	1·560	1·422	1·382	1·284	1·221	1·095	0·992	0·901	0·832	0·769	0·729
161	1·831	1·871	1·566	1·428	1·389	1·292	1·230	1·102	0·999	0·908	0·839	0·777	0·737
162	1·840	1·878	1·572	1·434	1·396	1·301	1·238	1·110	1·006	0·915	0·847	0·784	0·744
163	1·849	1·884	1·578	1·440	1·402	1·309	1·247	1·117	1·014	0·922	0·854	0·792	0·752
164	1·857	1·891	1·584	1·447	1·409	1·318	1·255	1·125	1·022	0·929	0·861	0·800	0·759
165	1·866	1·898	1·589	1·453	1·416	1·326	1·263	1·131	1·029	0·937	0·868	0·807	0·767
166	1·874	1·904	1·595	1·460	1·423	1·335	1·271	1·139	1·036	0·944	0·876	0·814	0·774
167	1·883	1·910	1·601	1·467	1·430	1·343	1·279	1·146	1·043	0·951	0·883	0·822	0·782
168	1·892	1·917	1·607	1·473	1·437	1·351	1·287	1·153	1·051	0·958	0·891	0·829	0·789
169	1·900	1·923	1·613	1·479	1·445	1·359	1·295	1·160	1·058	0·966	0·898	0·837	0·797
170	1·909	1·930	1·620	1·486	1·452	1·368	1·303	1·167	1·066	0·974	0·906	0·845	0·804
171	1·918	1·936	1·626	1·493	1·460	1·376	1·311	1·175	1·073	0·982	0·913	0·853	0·812
172	1·926	1·942	1·631	1·500	1·467	1·385	1·319	1·182	1·080	0·989	0·920	0·861	0·819
173	1·935	1·949	1·637	1·506	1·475	1·393	1·327	1·190	1·087	0·997	0·928	0·868	0·826
174	1·944	1·955	1·643	1·513	1·482	1·402	1·335	1·197	1·095	1·004	0·935	0·876	0·833
175	1·952	1·961	1·649	1·521	1·489	1·412	1·343	1·204	1·102	1·012	0·943	0·883	0·841
176	1·961	1·968	1·655	1·528	1·496	1·421	1·351	1·212	1·109	1·020	0·950	0·891	0·848
177	1·970	1·974	1·661	1·536	1·503	1·431	1·360	1·220	1·117	1·027	0·957	0·898	0·856
178	1·979	1·981	1·667	1·543	1·511	1·439	1·368	1·228	1·125	1·034	0·965	0·906	0·863
179	1·987	1·988	1·673	1·551	1·519	1·449	1·376	1·236	1·132	1·041	0·973	0·913	0·871
180	1·996	1·994	1·679	1·559	1·527	1·458	1·384	1·243	1·140	1·049	0·980	0·921	0·879

TABLE II

Extended Distances for pPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
8	−0·054	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	−0·079	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	−0·105	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	−0·131	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	−0·157	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	−0·182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	−0·207	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	−0·233	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	−0·259	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	−0·285	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	−0·310	−0·050	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	−0·337	−0·098	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	−0·363	−0·126	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	−0·388	−0·152	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	−0·414	−0·176	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	−0·440	−0·199	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	−0·465	−0·218	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	−0·491	−0·238	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	−0·516	−0·257	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	−0·541	−0·276	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	−0·567	−0·296	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	−0·593	−0·315	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	−0·619	−0·335	−0·124	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	−0·645	−0·358	−0·187	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	−0·670	−0·388	−0·213	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	−0·696	−0·419	−0·252	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	−0·722	−0·450	−0·279	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	−0·748	−0·480	−0·302	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	−0·774	−0·510	−0·327	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	−0·800	−0·542	−0·352	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	−0·826	−0·573	−0·380	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	−0·852	−0·603	−0·429	−0·210	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	−0·877	−0·634	−0·480	−0·258	.....	.....	.....	.....	.....	.....	.....	.....	.....
41	−0·903	−0·665	−0·664	−0·300	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	−0·930	−0·695	−0·787	−0,686	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	−0·955	−0·726	−0·809	−0·736	−0·619	−0·508	.....	.....	.....	.....	.....	.....	.....
44	−0·980	−0·757	−0·825	−0·768	−0·673	−0·577	−0·471	−0·103	.....	.....	.....	.....	.....
45	−1·007	−0·788	−0·839	−0·796	−0·702	−0·608	−0·518	−0·168	.....	.....	.....	.....	.....
46	−1·028	−0·819	−0·852	−0·815	−0·725	−0·634	−0·548	−0·224	.....	.....	.....	.....	.....
47	−1·046	−0·850	−0·864	−0·831	−0·747	−0·660	−0·576	−0·278	.....	.....	.....	.....	.....
48	−1·065	−0·880	−0·876	−0·845	−0·767	−0·681	−0·598	−0·324	.....	.....	.....	.....	.....
49	−1·084	−0·911	−0·888	−0·858	−0·786	−0·702	−0·620	−0·367	.....	.....	.....	.....	.....

TABLE II *(Continued)*

Extended Distances for pPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
50	−1·101	−0·942	−0·900	−0·870	−0·804	−0·719	−0·640	−0·409	.....	.....	.....	.....	.....
51	−1·119	−0·974	−0·912	−0·881	−0·820	−0·737	−0·659	−0·442	.....	.....	.....	.....	.....
52	−1·138	−1·004	−0·923	−0·892	−0·835	−0·753	−0·678	−0·470	.....	.....	.....	.....	.....
53	−1·157	−1·036	−0·933	−0·902	−0·848	−0·768	−0·695	−0·500	−0·204	.....	.....	.....	.....
54	−1·175	−1·067	−0·944	−0·911	−0·861	−0·783	−0·711	−0·527	−0·318	.....	.....	.....	.....
55	−1·194	−1·099	−0·955	−0·920	−0·873	−0·797	−0·726	−0·551	−0·362	.....	.....	.....	.....
56	−1·213	−1·110	−0·966	−0·930	−0·885	−0·812	−0·740	−0·571	−0·400	.....	.....	.....	.....
57	−1·232	−1·122	−0·977	−0·939	−0·898	−0·826	−0·753	−0·590	−0·432	.....	.....	.....	.....
58	−1·251	−1·134	−0·988	−0·949	−0·912	−0·840	−0·765	−0·607	−0·456	.....	.....	.....	.....
59	−1·269	−1·146	−0·999	−0·958	−0·925	−0·852	−0·778	−0·622	−0·478	−0·285	.....	.....	.....
60	−1·288	−1·159	−1·009	−0·968	−0·937	−0·863	−0·790	−0·637	−0·500	−0·330	.....	.....	.....
61	−1·307	−1·171	−1·019	−0·977	−0·949	−0·872	−0·802	−0·651	−0·518	−0·359	.....	.....	.....
62	−1·325	−1·183	−1·030	−0·987	−0·960	−0·881	−0·813	−0·665	−0·535	−0·383	.....	.....	.....
63	−1·344	−1·196	−1·041	−0·997	−0·971	−0·890	−0·824	−0·677	−0·552	−0·404	.....	.....	.....
64	−1·362	−1·208	−1·051	−1·006	−0·982	−0·898	−0·835	−0·687	−0·565	−0·425	−0·255	.....	.....
65	−1·380	−1·220	−1·062	−1·015	−0·992	−0·906	−0·845	−0·698	−0·578	−0·440	−0·292	.....	.....
66	−1·398	−1·232	−1·073	−1·025	−1·001	−0·915	−0·854	−0·709	−0·589	−0·453	−0·317	.....	.....
67	−1·414	−1·244	−1·084	−1·034	−1·011	−0·923	−0·861	−0·719	−0·600	−0·465	−0·336	.....	.....
68	−1·432	−1·256	−1·095	−1·044	−1·020	−0·931	−0·868	−0·728	−0·610	−0·478	−0·358	.....	.....
69	−1·449	−1·268	−1·106	−1·053	−1·030	−0·939	−0·875	−0·737	−0·620	−0·491	−0·374	.....	.....
70	−1·467	−1·279	−1·116	−1·062	−1·040	−0·947	−0·881	−0·746	−0·629	−0·503	−0·388	.....	.....
71	−1·482	−1·291	−1·127	−1·072	−1·049	−0·955	−0·888	−0·755	−0·638	−0·511	−0·401	−0·240	.....
72	−1·498	−1·303	−1·138	−1·081	−1·058	−0·963	−0·895	−0·764	−0·646	−0·521	−0·414	−0·279	.....
73	−1·412	−1·315	−1·149	−1·090	−1·067	−0·970	−0·902	−0·772	−0·654	−0·530	−0·427	−0·304	.....
74	−1·527	−1·328	−1·160	−1·100	−1·076	−0·978	−0·909	−0·780	−0·662	−0·540	−0·438	−0·321	.....
75	−1·541	−1·340	−1·170	−1·110	−1·085	−0·986	−0·916	−0·787	−0·669	−0·549	−0·448	−0·339	.....
76	−1·556	−1·352	−1·181	−1·119	−1·094	−0·994	−0·923	−0·794	−0·675	−0·558	−0·458	−0·352	.....
77	−1·572	−1·364	−1·192	−1·128	−1·103	−1·002	−0·930	−0·801	−0·682	−0·568	−0·468	−0·365	−0·200
78	−1·589	−1·376	−1·203	−1·137	−1·111	−1·010	−0·937	−0·808	−0·689	−0·577	−0·477	−0·378	−0·243
79	−1·604	−1·388	−1·214	−1·147	−1·118	−1·018	−0·944	−0·814	−0·696	−0·583	−0·486	−0·389	−0·271
80	−1·622	−1·400	−1·225	−1·157	−1·126	−1·026	−0·951	−0·820	−0·702	−0·591	−0·495	−0·400	−0·290
81	−1·638	−1·413	−1·235	−1·166	−1·133	−1·034	−0·958	−0·827	−0·709	−0·598	−0·503	−0·410	−0·310
82	−1·653	−1·426	−1·246	−1·176	−1·139	−1·042	−0·965	−0·834	−0·716	−0·606	−0·511	−0·420	−0·327
83	−1·669	−1·438	−1·257	−1·185	−1·145	−1·050	−0·971	−0·840	−0·722	−0·613	−0·519	−0·428	−0·342
84	−1·684	−1·449	−1·268	−1·194	−1·150	−1·058	−0·978	−0·847	−0·729	−0·621	−0·527	−0·437	−0·356
85	−1·700	−1·461	−1·278	−1·204	−1·155	−1·066	−0·986	−0·854	−0·735	−0·629	−0·534	−0·445	−0·368
86	−1·714	−1·473	−1·289	−1·213	−1·160	−1·074	−0·993	−0·860	−0·742	−0·636	−0·541	−0·453	−0·380
87	−1·728	−1·485	−1·300	−1·222	−1·166	−1·082	−1·001	−0·867	−0·749	−0·644	−0·549	−0·461	−0·392
88	−1·742	−1·497	−1·311	−1·232	−1·171	−1·090	−1·008	−0·874	−0·756	−0·652	−0·557	−0·469	−0·403
89	−1·756	−1·509	−1·321	−1·241	−1·176	−1·099	−1·016	−0·881	−0·762	−0·659	−0·565	−0·477	−0·413
90	−1·769	−1·522	−1·332	−1·251	−1·181	−1·109	−1·025	−0·888	−0·769	−0·669	−0·572	−0·485	−0·423
91	−1·781	−1·534	−1·343	−1·260	−1·193	−1·118	−1·033	−0·895	−0·777	−0·677	−0·580	−0·493	−0·433
92	−1·794	−1·545	−1·354	−1·270	−1·204	−1·128	−1·042	−0·902	−0·784	−0·685	−0·589	−0·502	−0·442
93	−1·808	−1·558	−1·365	−1·279	−1·214	−1·138	−1·052	−0·910	−0·791	−0·693	−0·598	−0·510	−0·451
94	−1·822	−1·570	−1·376	−1·288	−1·225	−1·148	−1·061	−0·917	−0·799	−0·702	−0·607	−0·518	−0·461

TABLE II *(Continued)*

Extended Distances for pPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
95	−1·837	−1·582	−1·387	−1·298	−1·236	−1·158	−1·070	−0·924	−0·808	−0·710	−0·616	−0·526	−0·470
96	−1·851	−1·594	−1·398	−1·307	−1·247	−1·168	−1·078	−0·932	−0·816	−0·719	−0·625	−0·535	−0·480
97	−1·866	−1·606	−1·409	−1·317	−1·258	−1·178	−1·087	−0·940	−0·824	−0·727	−0·633	−0·544	−0·490
98	−1·880	−1·619	−1·420	−1·326	−1·269	−1·188	−1·097	−0·948	−0·832	−0·735	−0·642	−0·553	−0·500
99	−1·893	−1·631	−1·430	−1·335	−1·280	−1·198	−1·106	−0·956	−0·841	−0·744	−0·651	−0·563	−0·510
100	−1·906	−1·642	−1·441	−1·344	−1·291	−1·209	−1·116	−0·964	−0·850	−0·752	−0·661	−0·573	−0·520
101	−1·918	−1·654	−1·451	−1·353	−1·302	−1·219	−1·126	−0·973	−0·860	−0·760	−0·671	−0·583	−0·530
102	−1·931	−1·667	−1·462	−1·362	−1·313	−1·229	−1·136	−0·982	−0·869	−0·769	−0·681	−0·595	−0·540
103	−1·943	−1·679	−1·473	−1·371	−1·324	−1·239	−1·146	−0·991	−0·878	−0·780	−0·691	−0·607	−0·551
104	−1·956	−1·692	−1·484	−1·380	−1·335	−1·249	−1·155	−1·001	−0·888	−0·791	−0·701	−0·618	−0·562
105	−1·968	−1·706	−1·496	−1·395	−1·346	−1·260	−1·165	−1·013	−0·898	−0·802	−0·712	−0·629	−0·573
106	−1·980	−1·720	−1·506	−1·408	−1·357	−1·270	−1·175	−1·023	−0·910	−0·813	−0·723	−0·640	−0·585
107	−1·992	−1·731	−1·517	−1·421	−1·368	−1·280	−1·185	−1·034	−0·922	−0·824	−0·734	−0·651	−0·597
108	−2·004	−1·741	−1·528	−1·435	−1·379	−1·290	−1·194	−1·045	−0·933	−0·834	−0·745	−0·662	−0·609
109	−2·017	−1·751	−1·538	−1·449	−1·390	−1·300	−1·204	−1·055	−0·945	−0·845	−0·757	−0·675	−0·620
110	−2·030	−1·764	−1·548	−1·462	−1·401	−1·310	−1·214	−1·066	−0·957	−0·857	−0·768	−0·688	−0·632
111	−2·042	−1·776	−1·559	−1·475	−1·412	−1·320	−1·225	−1·077	−0·969	−0·867	−0·779	−0·700	−0·644
112	−2·055	−1·788	−1·570	−1·489	−1·423	−1·330	−1·236	−1·088	−0·981	−0·878	−0·791	−0·712	−0·655
113	−2·069	−1·800	−1·580	−1·503	−1·434	−1·340	−1·249	−1·100	−0·993	−0·889	−0·803	−0·724	−0·667
114	−2·081	−1·812	−1·591	−1·516	−1·445	−1·350	−1·261	−1·112	−1·005	−0·900	−0·815	−0·737	−0·680
115	−2·094	−1·824	−1·602	−1·530	−1·456	−1·360	−1·274	−1·124	−1·016	−0·911	−0·827	−0·750	−0·693
116	−2·106	−1·836	−1·612	−1·544	−1·467	−1·370	−1·287	−1·135	−1·028	−0·922	−0·839	−0·761	−0·705
117	−2·120	−1·849	−1·623	−1·557	−1·478	−1·380	−1·300	−1·147	−1·040	−0·934	−0·852	−0·774	−0·718
118	−2·134	−1·861	−1·634	−1·570	−1·489	−1·390	−1·312	−1·159	−1·052	−0·945	−0·865	−0·788	−0·731
119	−2·148	−1·873	−1·645	−1·584	−1·500	−1·400	−1·325	−1·172	−1·064	−0·957	−0·877	−0·801	−0·743
120	−2·161	−1·885	−1·655	−1·598	−1·510	−1·412	−1·337	−1·184	−1·076	−0·969	−0·888	−0·813	−0·756
121	−2·173	−1·898	−1·666	−1·611	−1·521	−1·425	−1·349	−1·197	−1·088	−0·981	−0·900	−0·826	−0·769
122	−2·186	−1·910	−1·676	−1·625	−1·532	−1·439	−1·361	−1·209	−1·099	−0·992	−0·913	−0·839	−0·782
123	−2·198	−1·922	−1·687	−1·639	−1·543	−1·453	−1·374	−1·221	−1·110	−1·004	−0·925	−0·852	−0·794
124	−2·211	−1·934	−1·698	−1·652	−1·554	−1·467	−1·386	−1·233	−1·122	−1·015	−0·937	−0·865	−0·807
125	−2·223	−1·946	−1·711	−1·665	−1·565	−1·481	−1·399	−1·245	−1·134	−1·027	−0·949	−0·877	−0·819
126	−2·235	−1·958	−1·725	−1·679	−1·476	−1·496	−1·411	−1·257	−1·146	−1·039	−0·961	−0·889	−0·832
127	−2·247	−1·970	−1·740	−1·692	−1·587	−1·510	−1·424	−1·270	−1·158	−1·052	−0·972	−0·902	−0·845
128	−2·259	−1·982	−1·754	−1·706	−1·598	−1·524	−1·436	−1·282	−1·170	−1·064	−0·984	−0·914	−0·858
129	−2·270	−1·994	−1·769	−1·719	−1·609	−1·538	−1·449	−1·294	−1·182	−1·076	−0·996	−0·926	−0·871
130	−2·281	−2·007	−1·783	−1·733	−1·620	−1·551	−1·461	−1·306	−1·194	−1·089	−1·008	−0·939	−0·884
131	−2·292	−2·020	−1·797	−1·747	−1·631	−1·565	−1·474	−1·318	−1·206	−1·101	−1·020	−0·951	−0·896
132	−2·303	−2·031	−1·811	−1·760	−1·642	−1·580	−1·486	−1·330	−1·218	−1·114	−1·032	−0·962	−0·909
133	−2·315	−2·043	−1·825	−1·774	−1·656	−1·593	−1·499	−1·342	−1·230	−1·126	−1·044	−0·974	−0·921
134	−2·327	−2·055	−1·839	−1·788	−1·670	−1·608	−1·512	−1·355	−1·241	−1·138	−1·056	−0·985	−0·934
135	−2·339	−2·068	−1·853	−1·801	−1·687	−1·622	−1·524	−1·368	−1·253	−1·150	−1·068	−0·997	−0·947
136	−2·352	−2·080	−1·868	−1·815	−1·702	−1·636	−1·536	−1·379	−1·265	−1·162	−1·080	−1·009	−0·960
137	−2·365	−2·092	−1·883	−1·828	−1·718	−1·650	−1·549	−1·391	−1·278	−1·175	−1·092	−1·021	−0·972
138	−2·377	−2·105	−1·897	−1·841	−1·734	−1·664	−1·561	−1·404	−1·290	−1·188	−1·104	−1·032	−0·985
139	−2·389	−2·117	−1·911	−1·855	−1·750	−1·678	−1·574	−1·416	−1·302	−1·200	−1·115	−1·044	−0·998

TABLE II *(Concluded)*

Extended Distances for pPP

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
140	−2·401	−2·129	−1·925	−1·868	−1·766	−1·692	−1·587	−1·428	−1·313	−1·213	−1·127	−1·055	−1·010
141	−2·413	−2·141	−1·939	−1·882	−1·783	−1·706	−1·601	−1·441	−1·326	−1·225	−1·139	−1·067	−1·022
142	−2·425	−2·153	−1·953	−1·896	−1·799	−1·720	−1·618	−1·456	−1·340	−1·237	−1·152	−1·079	−1·035
143	−2·437	−2·166	−1·967	−1·909	−1·815	−1·734	−1·634	−1·471	−1·354	−1·250	−1·165	−1·091	−1·048
144	−2·449	−2·178	−1·981	−1·922	−1·832	−1·748	−1·650	−1·486	−1·368	−1·264	−1·178	−1·104	−1·061
145	−2·461	−2·190	−1·995	−1·936	−1·849	−1·762	−1·667	−1·501	−1·382	−1·278	−1·192	−1·117	−1·075
146	−2·472	−2·202	−2·010	−1·949	−1·865	−1·776	−1·683	−1·516	−1·397	−1·292	−1·205	−1·130	−1·088
147	−2·483	−2·214	−2·024	−1·963	−1·881	−1·790	−1·700	−1·531	−1·411	−1·305	−1·218	−1·143	−1·101
148	−2·494	−2·227	−2·038	−1·976	−1·898	−1·804	−1·718	−1·546	−1·425	−1·319	−1·232	−1·155	−1·114
149	−2·505	−2·240	−2·052	−1·990	−1·915	−1·818	−1·733	−1·561	−1·440	−1·332	−1·245	−1·168	−1·127
150	−2·516	−2·252	−2·066	−2·004	−1·932	−1·832	−1·749	−1·575	−1·453	−1·346	−1·259	−1·181	−1·140
151	−2·528	−2·263	−2·080	−2·017	−1·949	−1·846	−1·765	−1·590	−1·468	−1·360	−1·272	−1·193	−1·153
152	−2·539	−2·275	−2·094	−2·031	−1·966	−1·860	−1·781	−1·605	−1·482	−1·374	−1·286	−1·206	−1·166
153	−2·551	−2·288	−2·109	−2·044	−1·983	−1·874	−1·798	−1·620	−1·496	−1·388	−1·299	−1·219	−1·180
154	−2·562	−2·300	−2·123	−2·060	−1·999	−1·888	−1·814	−1·636	−1·510	−1·401	−1·313	−1·232	−1·194
155	−2·573	−2·312	−2·137	−2·080	−2·016	−1·902	−1·831	−1·651	−1·525	−1·415	−1·326	−1·246	−1·208
156	−2·584	−2·324	−2·151	−2·100	−2·033	−1·916	−1·847	−1·667	−1·539	−1·429	−1·340	−1·261	−1·223
157	−2·596	−2·336	−2·165	−2·119	−2·050	−1·930	−1·863	−1·682	−1·554	−1·442	−1·355	−1·276	−1·237
158	−2·608	−2·348	−2·180	−2·138	−2·067	−1·944	−1·880	−1·697	−1·568	−1·456	−1·369	−1·291	−1·252
159	−2·619	−2·361	−2·194	−2·156	−2·084	−1·960	−1·896	−1·712	−1·583	−1·470	−1·384	−1·306	−1·266
160	−2·630	−2·373	−2·208	−2·175	−2·101	−1·978	−1·913	−1·728	−1·597	−1·485	−1·399	−1·322	−1·280
161	−2·640	−2·385	−2·222	−2·193	−2·118	−1·995	−1·929	−1·743	−1·612	−1·500	−1·415	−1·338	−1·295
162	−2·651	−2·397	−2·236	−2·210	−2·135	−2·014	−1·945	−1·758	−1·626	−1·516	−1·430	−1·353	−1·309
163	−2·662	−2·406	−2·250	−2·225	−2·152	−2·032	−1·961	−1·773	−1·639	−1·531	−1·445	−1·368	−1·323
164	−2·673	−2·415	−2·265	−2·239	−2·169	−2·051	−1·978	−1·788	−1·653	−1·547	−1·460	−1·384	−1·338
165	−2·684	−2·425	−2·279	−2·251	−2·186	−2·069	−1·994	−1·803	−1·666	−1·562	−1·475	−1·399	−1·352
166	−2·695	−2·435	−2·293	−2·263	−2·203	−2·088	−2·011	−1·818	−1·679	−1·577	−1·490	−1·414	−1·366
167	−2·706	−2·445	−2·307	−2·275	−2·219	−2·107	−2·027	−1·834	−1·692	−1·592	−1·505	−1·429	−1·380
168	−2·717	−2·455	−2·321	−2·287	−2·236	−2·126	−2·043	−1·849	−1·705	−1·608	−1·520	−1·444	−1·394
169	−2·727	−2·466	−2·335	−2·298	−2·252	−2·144	−2·060	−1·866	−1·718	−1·622	−1·535	−1·460	−1·408
170	−2·737	−2·477	−2·350	−2·308	−2·268	−2·164	−2·076	−1·884	−1·731	−1·638	−1·550	−1·470	−1·423
171	−2·747	−2·489	−2·364	−2·318	−2·285	−2·183	−2·092	−1·900	−1·744	−1·654	−1·565	−1·479	−1·437
172	−2·756	−2·500	−2·379	−2·328	−2·301	−2·200	−2·109	−1·918	−1·757	−1·669	−1·580	−1·488	−1·451
173	−2·766	−2·510	−2·393	−2·337	−2·318	−2·218	−2·125	−1·935	−1·770	−1·684	−1·595	−1·496	−1·465
174	−2·776	−2·520	−2·408	−2·345	−2·334	−2·234	−2·141	−1·952	−1·783	−1·699	−1·610	−1·505	−1·479
175	−2·786	−2·531	−2·422	−2·354	−2·351	−2·250	−2·157	−1·969	−1·796	−1·714	−1·627	−1·513	−1·493
176	−2·797	−2·542	−2·436	−2·362	−2·367	−2·265	−2·174	−1·985	−1·809	−1·729	−1·643	−1·522	−1·507
177	−2·807	−2·554	−2·450	−2·370	−2·383	−2·279	−2·187	−2·000	−1·823	−1·744	−1·659	−1·530	−1·521
178	−2·817	−2·566	−2·464	−2·377	−2·397	−2·292	−2·200	−2·015	−1·836	−1·760	−1·671	−1·539	−1·535
179	−2·827	−2·578	−2·478	−2·384	−2·412	−2·304	−2·213	−2·030	−1·849	−1·775	−1·683	−1·547	−1·549
180	−2·837	−2·590	−2·492	−2·391	−2·425	−2·316	−2·226	−2·042	−1·862	−1·790	−1·695	−1·555	−1·563

TABLE III

Extended Distances for $pPKP_1$

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
109	.....	.....	−6·68	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
110	−7·17	−6·93	−6·69	−6·45	−6·22	−6·00	−5·79	−5·40	.....	.....	.....	.....	.....
111	−7·19	−6·94	−6·70	−6·46	−6·23	−6·01	−5·80	−5·41	−5·11	−4·87	−4·68	−4·53	.....
112	−7·20	−6·96	−6·71	−6·47	−6·25	−6·03	−5·81	−5·42	−5·12	−4·88	−4·69	−4·54	−4·38
113	−7·22	−6·97	−6·73	−6·49	−6·26	−6·04	−5·82	−5·43	−5·13	−4·90	−4·70	−4·55	−4·39
114	−7·23	−6·99	−6·74	−6·50	−6·27	−6·05	−5·84	−5·44	−5·14	−4·91	−4·71	−4·56	−4·40
115	−7·25	−7·00	−6·76	−6·52	−6·29	−6·06	−5·85	−5·45	−5·15	−4·92	−4·72	−4·57	−4·41
116	−7·27	−7·02	−6·77	−6·53	−6·30	−6·08	−5·86	−5·46	−5·17	−4·93	−4·73	−4·58	−4·42
117	−7·28	−7·04	−6·79	−6·55	−6·31	−6·09	−5·88	−5·48	−5·18	−4·94	−4·74	−4·59	−4·43
118	−7·30	−7·05	−6·80	−6·56	−6·33	−6·11	−5·89	−5·49	−5·19	−4·95	−4·75	−4·60	−4·44
119	−7·32	−7·07	−6·82	−6·58	−6·34	−6·12	−5·90	−5·50	−5·20	−4·96	−4·77	−4·61	−4·45
120	−7·34	−7·08	−6·83	−6·60	−6·36	−6·14	−5·92	−5·51	−5·22	−4·97	−4·78	−4·62	−4 46
121	−7·36	−7·10	−6·85	−6·61	−6·37	−6·15	−5·93	−5·53	−5·23	−4·99	−4·79	−4·63	−4·47
122	−7·37	−7·12	−6·87	−6·63	−6·39	−6·17	−5·95	−5·54	−5·24	−5·00	−4·80	−4·64	−4·49
123	−7·39	−7·14	−6·89	−6·64	−6·41	−6·18	−5·96	−5·56	−5·26	−5·01	−4·81	−4·65	−4·50
124	−7·41	−7·16	−6·90	−6·66	−6·42	−6·20	−5·98	−5·57	−5·27	−5·02	−4·83	−4·67	−4·51
125	−7·43	−7·18	−6·92	−6·68	−6·44	−6·21	−6·00	−5·59	−5·29	−5·04	−4·84	−4·68	−4·52
126	−7·45	−7·20	−6·94	−6·70	−6·46	−6·23	−6·01	−5·60	−5·30	−5·05	−4·86	−4·70	−4·54
127	−7·47	−7·22	−6·96	−6·72	−6·48	−6·25	−6·03	−5·62	−5·32	−5·07	−4·87	−4·71	−4·55
128	−7·49	−7·24	−6·98	−6·74	−6·50	−6·27	−6·05	−5·63	−5·33	−5·08	−4·88	−4·72	−4·56
129	−7·52	−7·26	−7·00	−6·76	−6·52	−6·29	−6·07	−5·65	−5·35	−5·09	−4·90	−4·74	−4·58
130	−7·54	−7·29	−7·03	−6·78	−6·54	−6·31	−6·09	−5·67	−5·37	−5·11	−4·91	−4·75	−4·59
131	−7·57	−7·31	−7·05	−6·80	−6·57	−6·33	−6·11	−5·69	−5·39	−5·13	−4·93	−4·76	−4·61
132	−7·60	−7·33	−7·08	−6·82	−6·59	−6·35	−6·13	−5·71	−5·40	−5·15	−4·94	−4·78	−4·62
133	−7·63	−7·36	−7·11	−6·85	−6·62	−6·38	−6·15	−5·73	−5·42	−5·17	−4·96	−4·80	−4·64
134	−7·66	−7·39	−7·14	−6·88	−6·64	−6·40	−6·18	−5·75	−5·45	−5·19	−4·98	−4·81	−4 66
135	−7·70	−7·43	−7·17	−6·92	−6·67	−6·43	−6·21	−5·78	−5·47	−5·21	−5·01	−4·84	−4·68
136	−7·74	−7·47	−7·21	−6·96	−6·71	−6·46	−6·24	−5·81	−5·50	−5·24	−5·03	−4·86	−4·70
137	−7·79	−7·52	−7·25	−7·00	−6·74	−6·50	−6·27	−5·84	−5·52	−5·27	−5·06	−4·89	−4·73
138	−7·84	−7·57	−7·30	−7·04	−6·79	−6·55	−6·31	−5·88	−5·56	−5·30	−5·09	−4·92	−4·75
139	−7·89	−7·62	−7·35	−7·09	−6·84	−6·60	−6·36	−5·92	−5·60	−5·34	−5·12	−4·95	−4·79
140	−7·95	−7·68	−7·41	−7·15	−6·89	−6·65	−6·41	−5·97	−5·65	−5·38	−5·16	−4·99	−4·83
141	−8·02	−7·74	−7·47	−7·21	−6·95	−6·71	−6·46	−6·02	−5·70	−5·43	−5·20	−5·03	−4·86
142	−8·10	−7·82	−7·54	−7·27	−7·02	−6·77	−6·52	−6·07	−5·75	−5·48	−5·25	−5·08	−4·91
143	−8·18	−7·90	−7·62	−7·35	−7·08	−6·83	−6·59	−6·14	−5·80	−5·53	−5·31	−5·12	−4·96
144	−8·27	−7·99	−7·71	−7·43	−7·17	−6·90	−6·66	−6·20	−5·87	−5·59	−5·37	−5·18	−5·01
145	−8·38	−8·09	−7·80	−7·52	−7·25	−6·99	−6·74	−6·27	−5·94	−5·66	−5·43	−5·24	−5·07
146	−8·50	−8·20	−7·91	−7·63	−7·36	−7·09	−6·83	−6·36	−6·02	−5·73	−5·50	−5·31	−5·13
147	−8·63	−8·32	−8·03	−7·75	−7·47	−7·20	−6·93	−6·45	−6·11	−5·82	−5·58	−5·39	−5·21
148	−8·77	−8·46	−8·17	−7·88	−7·59	−7·31	−7·04	−6·56	−6·20	−5·91	−5·67	−5·48	−5·29
149	−8·94	−8·63	−8·32	−8·02	−7·73	−7·46	−7·18	−6·68	−6·31	−6·02	−5·77	−5·57	−5·38

TABLE III *(Concluded)*

Extended Distances for $pPKP_1$

Δ°	*Depth h =*												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
150	−9·13	−8·81	−8·49	−8·19	−7·89	−7·60	−7·32	−6·81	−6·44	−6·14	−5·88	−5·68	−5·48
151	−9·34	−9·01	−8·69	−8·37	−8·07	−7·77	−7·48	−6·97	−6·59	−6·28	−6·01	−5·80	−5·60
152	−9·57	−9·23	−8·90	−8·58	−8·26	−7·96	−7·66	−7·14	−6·75	−6·43	−6·16	−5·95	−5·74
153	−9·82	−9·48	−9·13	−8·80	−8·48	−8·17	−7·87	−7·32	−6·92	−6·59	−6·32	−6·10	−5·89
154	−10·1	−9·74	−9·38	−9·05	−8·72	−8·40	−8·08	−7·53	−7·12	−6·78	−6·49	−6·26	−6·05
155	−10·4	−10·0	−9·67	−9·33	−8·98	−8·66	−8·32	−7·74	−7·33	−6·98	−6·68	−6·45	−6·22
156	−10·8	−10·4	−10·0	−9·62	−9·26	−8·93	−8·59	−8·01	−7·56	−7·20	−6·90	−6·65	−6·42
157	−11·1	−10·7	−10·3	−10·0	−9·58	−9·24	−8·89	−8·28	−7·82	−7·44	−7·14	−6·88	−6·62
158	−11·6	−11·1	−10·7	−10·4	−9·93	−9·58	−9·23	−8·60	−8·11	−7·73	−7·41	−7·14	−6·84
159	−12·1	−11·6	−11·2	−10·8	−10·4	−9·97	−9·60	−8·95	−8·45	−8·05	−7·71	−7·43	−7·17
160	−12·6	−12·1	−11·7	−11·2	−10·9	−10·4	−10·0	−9·35	−8·84	−8·40	−8·05	−7·78	−7·48
161	−13·2	−12·7	−12·3	−11·8	−11·4	−10·9	−10·5	−9·81	−9·25	−8·80	−8·44	−8·15	−7·85
162	−13·9	−13·3	−12·9	−12·4	−11·9	−11·5	−11·1	−10·3	−9·73	−9·25	−8·86	−8·56	−8·27
163	−14·7	−14·1	−13·6	−13·1	−12·6	−12·2	−11·7	−10·9	−10·3	−9·76	−9·35	−9·03	−8·72
164	−15·6	−15·0	−14·4	−13·9	−13·4	−12·9	−12·4	−11·5	−10·9	−10·4	−9·93	−9·59	−9·25
165	−16·6	−16·0	−15·4	−14·8	−14·3	−13·7	−13·2	−12·3	−11·6	−11·0	−10·6	−10·3	−9·86
166	−17·8	−17·2	−16·5	−15·9	−15·4	−14·8	−14·2	−13·2	−12·5	−11·9	−11·4	−11·0	−10·6
167	−19·2	−18·5	−17·8	−17·1	−16·6	−15·9	−15·3	−14·2	−13·5	−12·8	−12·2	−11·9	−11·4
168	−20·8	−20·0	−19·3	−18·6	−17·9	−17·2	−16·6	−15·5	−14·6	−13·8	−13·2	−12·9	−12·3
169	−22·6	−21·9	−21·1	−20·3	−19·6	−18·8	−18·1	−16·9	−15·9	−15·1	−14·5	−14·2	−13·5
170	−24·9	−24·0	−23·2	−22·3	−21·6	−20·7	−20·0	−18·5	−17·6	−16·7	−15·9	−15·4	−14·9
171	−27·7	−26·8	−25·8	−24·9	−24·0	−23·1	−22·3	−20·7	−19·6	−18·6	−17·8	−17·1	−16·6
172	−31·2	−30·1	−29·1	−28·0	−27·0	−26·0	−25·0	−23·3	−22·1	−21·0	−20·1	−19·3	−18·6
173	−35·6	−34·4	−33·2	−32·0	−30·9	−29·8	−28·6	−26·7	−25·2	−24·1	−23·0	−22·2	−21·3
174	−41·6	−40·3	−38·6	−37·4	−36·1	−34·7	−33·5	−31·1	−29·5	−28·1	−26·9	−26·0	−25·0
175	−49·9	−48·3	−46·4	−44·9	−43·3	−41·7	−40·1	−37·2	−35·5	−33·7	−32·5	−31·2	−30·3
176	−62·8	−60·4	−58·1	−56·1	−54·0	−52·1	−50·3	−46·6	−44·4	−42·2	−40·7	−39·2	−38·0
177	−83·8	−80·7	−77·6	−75·6	−72·7	−70·0	−67·2	−62·2	−59·6	−56·7	−54·9	−52·9	−51·2
178	−126	−123	−118	−115	−110	−107	−102	−94·9	−90·5	−85·8	−83·7	−80·9	−77·8
179	−254	−246	−237	−232	−224	−218	−212	−196	−185	−176	−170	−164	−158
180	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞	−∞

TABLE IV

Extended Distances for $pPKP_2$

Δ°	Depth h =												
	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
144	−4·03	−3·96	−3·87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
145	−3·73	−3·64	−3·55	−3·45	−3·38	−3·30	.....	−3·05	−2·93	.....	.....	.....	.....
146	−3·57	−3·46	−3·35	−3·26	−3·17	−3·07	−2·99	−2·81	−2·69	−2·61	−2·53	.....	−2·46
147	−3·48	−3·36	−3·25	−3·14	−3·04	−2·94	−2·85	−2·66	−2·56	−2·43	−2·35	−2·32	−2·27
148	−3·41	−3·29	−3·18	−3·08	−2·97	−2·86	−2·77	−2·58	−2·44	−2·33	−2·25	−2·18	−2·14
149	−3·36	−3·24	−3·13	−3·02	−2·91	−2·81	−2·72	−2·52	−2·38	−2·27	−2·18	−2·11	−2·05
150	−3·32	−3·20	−3·09	−2·98	−2·87	−2·77	−2·67	−2·48	−2·34	−2·22	−2·13	−2·06	−1·99
151	−3·29	−3·17	−3·06	−2·95	−2·84	−2·73	−2·64	−2·44	−2·31	−2·18	−2·10	−2·02	−1·96
152	−3·26	−3·15	−3·03	−2·92	−2·81	−2·71	−2·61	−2·41	−2·28	−2·16	−2·07	−2·00	−1·93
153	−3·24	−3·12	−3·01	−2·90	−2·79	−2·69	−2·58	−2·39	−2·25	−2·14	−2·05	−1·97	−1·90
154	−3·21	−3·10	−2·99	−2·88	−2·78	−2·66	−2·56	−2·37	−2·23	−2·12	−2·03	−1·95	−1·88
155	−3·20	−3·09	−2·97	−2·86	−2·76	−2·65	−2·55	−2·36	−2·22	−2·11	−2·01	−1·93	−1·86
156	−3·18	−3·08	−2·96	−2·85	−2·74	−2·63	−2·54	−2·34	−2·21	−2·09	−2·00	−1·92	−1·85
157	−3·17	−3·06	−2·94	−2·83	−2·73	−2·62	−2·52	−2·33	−2·19	−2·07	−1·98	−1·91	−1·84
158	−3·16	−3·05	−2·93	−2·82	−2·72	−2·61	−2·51	−2·32	−2·18	−2·06	−1·97	−1·90	−1·82
159	−3·14	−3·04	−2·92	−2·81	−2·71	−2·60	−2·50	−2·31	−2·17	−2·05	−1·96	−1·89	−1·81
160	−3·13	−3·03	−2·91	−2·80	−2·70	−2·59	−2·49	−2·30	−2·16	−2·04	−1·95	−1·88	−1·80
161	−3·12	−3·02	−2·90	−2·79	−2·69	−2·58	−2·48	−2·29	−2·15	−2·03	−1·94	−1·87	−1·79
162	−3·11	−3·01	−2·89	−2·78	−2·68	−2·57	−2·47	−2·28	−2·14	−2·03	−1·93	−1·86	−1·78
163	−3·10	−3·00	−2·88	−2·77	−2·67	−2·56	−2·46	−2·27	−2·14	−2·02	−1·93	−1·85	−1·78
164	−3·10	−2·99	−2·88	−2·76	−2·66	−2·55	−2·46	−2·27	−2·13	−2·01	−1·92	−1·85	−1·77
165	−3·09	−2·98	−2·87	−2·76	−2·65	−2·55	−2·45	−2·26	−2·12	−2·01	−1·91	−1·84	−1·76
166	−3·08	−2·97	−2·86	−2·75	−2·65	−2·54	−2·44	−2·25	−2·12	−2·00	−1·91	−1·83	−1·76
167	−3·08	−2·97	−2·85	−2·74	−2·64	−2·54	−2·44	−2·25	−2·11	−1·99	−1·90	−1·83	−1·75
168	−3·07	−2·96	−2·85	−2·74	−2·64	−2·53	−2·43	−2·24	−2·11	−1·99	−1·90	−1·82	−1·75
169	−3·07	−2·96	−2·85	−2·74	−2·63	−2·53	−2·43	−2·24	−2·10	−1·99	−1·89	−1·82	−1·74
170	−3·07	−2·95	−2·84	−2·73	−2·63	−2·52	−2·42	−2·24	−2·10	−1·98	−1·89	−1·82	−1·74
171	−3·06	−2·95	−2·84	−2·73	−2·63	−2·52	−2·42	−2·23	−2·10	−1·98	−1·89	−1·81	−1·74
172	−3·06	−2·95	−2·84	−2·73	−2·62	−2·52	−2·42	−2·23	−2·09	−1·98	−1·88	−1·81	−1·74
173	−3·06	−2·95	−2·83	−2·72	−2·62	−2·52	−2·42	−2·23	−2·09	−1·98	−1·88	−1·81	−1·73
174	−3·06	−2·94	−2·83	−2·72	−2·62	−2·51	−2·41	−2·23	−2·09	−1·98	−1·88	−1·80	−1·73
175	−3·05	−2·94	−2·83	−2·72	−2·62	−2·51	−2·41	−2·22	−2·09	−1·97	−1·88	−1·80	−1·73
176	−3·05	−2·94	−2·83	−2·72	−2·61	−2·51	−2·41	−2·22	−2·09	−1·97	−1·88	−1·80	−1·73
177	−3·05	−2·94	−2·83	−2·72	−2·61	−2·51	−2·41	−2·22	−2·08	−1·97	−1·87	−1·80	−1·73
178	−3·05	−2·94	−2·82	−2·72	−2·61	−2·51	−2·41	−2·22	−2·08	−1·97	−1·87	−1·80	−1·73
179	−3·05	−2·93	−2·82	−2·71	−2·61	−2·51	−2·41	−2·22	−2·08	−1·97	−1·87	−1·80	−1·72
180	−3·05	−2·93	−2·82	−2·71	−2·61	−2·51	−2·40	−2·22	−2·08	−1·97	−1·87	−1·80	−1·72

TABLE V

Extended Distances for P for Short Epicentral Distances

Δ°	Depth h =													
	Surface	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·10	0·11	0·12
0·5	0·021	−1·0	−2·4	−2·8	−3·85	−4·90	−5·89	−6·87	−7·58	−8·39	−9·27	−9·98	−10·96	−12·03
1·0	0·042	−0·039	−1·10	−1·70	−2·05	−2·37	−2·92	−3·40	−3·75	−4·18	−4·60	−5·06	−5·52	−5·98
1·5	0·061	0·008	−0·347	−0·77	−1·38	−1·64	−1·95	−2·17	−2·33	−2·76	−3·04	−3·34	−3·65	−3·97
2·0	0·077	0·031	−0·191	−0·498	−0·805	−1·18	−1·41	−1·59	−1·85	−2·02	−2·175	−2·48	−2·71	−2·96
2·5	0·093	0·052	−0·107	−0·371	−0·592	−0·87	−1·08	−1·24	−1·44	−1·625	−1·795	−1·985	−2·15	−2·34