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ASYMPTOTISCHE LÖSUNGEN  
IM RESTRINGIERTEN DREIKÖRPER-  
PROBLEM (PROBLÈME RESTREINT)

VON

ELIS STRÖMGREN

MIT 1 TAFEL



KØBENHAVN

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BIANCO LUNOS BOGTRYKKERI

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In der Publikation 47 der Kopenhagener Sternwarte (Auszug aus der Seeliger-Festschrift; Springer, Berlin 1924) habe ich eine Untersuchung über einfach-periodische asymptotische Lösungen im problème restreint veröffentlicht. Die damals gegebenen Resultate machen einen Teil einer umfassenden Rechenarbeit über das System von unendlich vielen Bahnen aus, die zu den Librationspunkten  $L_4$  und  $L_5$  asymptotisch verlaufen.

Die in der erwähnten Publ. No. 47 veröffentlichten Resultate haben nachher zu einer Untersuchung über Klassen periodischer Bahnen Anlass gegeben, welche die dort mitgeteilten periodisch-asymptotischen Bahnen zu Grenzbahnen haben. Aus diesen Untersuchungen, die teilweise (Vier Bahnklassen im problème restreint, von JENS P. MÖLLER, A. N. 5574 und Publ. der Kop. Sternwarte No. 60) schon veröffentlicht, teilweise noch unpubliziert sind, geht hervor, dass eine ganze Reihe Klassen periodischer Bahnen existieren, die von den in der Publ. 47 mitgeteilten fünf periodisch-asymptotischen Bahnen I, II, III, IV und V<sup>1</sup> je zwei in allen möglichen Kombinationen zusammen genommen, begrenzt sind — ausser den in der Publ. 47 schon erwähnten Klassen, die je eine der existierenden einfach-periodischen

<sup>1</sup> Die Vermutung (Publ. 47, p. 12 und »Ergebnisse der exakten Naturwissenschaften« Bd. IV. p. 239), dass zwischen den periodischen Bahnen IV und V noch eine 6:ste einfach-periodische asymptotische Bahn existieren sollte, hat sich nicht bestätigt.

asymptotischen Bahnen zur Grenzbahn haben (I = Klasse  $k_1$ , II = Klasse  $k_2$ , III und IV = »Pseudolibrationen« und V = Klasse  $l$ ). Nachdem diese Resultate erhalten sind, stehen die fünf einfach-periodischen asymptotischen Bahnen als das Gerüst zu dem weitaus grössten Teil der Klassen einfach-periodischer Bahnen im problème restreint dar.

Der Zweck der jetzt vorliegenden Arbeit ist, die — bisher unpublizierten — Gesamtergebnisse der numerischen Rechnungen über Bahnen, die zu den Librationenpunkten  $L_4$  und  $L_5$  asymptotisch verlaufen, mitzuteilen.

Die Hauptpunkte der Theorie und der bei der numerischen Rechnung angewandten Methode sind in der Publ. 47, p. 7—9 gegeben (s. auch A. N. 4015). Die Berechnungsmethode ist eine gemischte: sie fängt mit der Anwendung der Gesetze der infinitesimalen Bewegung in der Nähe des Librationpunktes  $L_4$  an und setzt bei einem passend gewählten Zeitpunkt mit numerischer Integration fort.

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Wir stellen uns zunächst ein bewegliches Koordinatensystem  $(\xi, \eta)$  vor, wo der Anfangspunkt mit dem gemeinsamen Schwerpunkt der zwei gleich grossen endlichen Massen zusammenfällt. Die numerische Integration fängt immer in einem Punkte auf der  $\eta$ -Achse an ( $\xi$  also = 0); dieser Punkt ist durch den Anfangswert von  $\eta$  ( $\eta_0$ ) eindeutig bestimmt. Es sind 25 Bahnen gerechnet worden, von denen 21 in der beigefügten Tafel eingezeichnet sind; vier Bahnen (No. 6, 10, 21 und 23) sind auf dieser Tafel weggelassen worden, weil sie bei dem angewandten Maassstabe mit vier der gezeichneten Bahnen zusammenfallen würden oder wenigstens schwer von ihnen getrennt werden könnten. Auf der Tafel sind die fünf periodischen Bahnen durch Pfeile besonders hervorgehoben, und auch dadurch,

dass die zugehörigen  $\eta_0$ -Werte bei diesen Pfeilen wiederholt sind.

Wir bezeichnen mit  $x, y$  die Koordinaten in dem beweglichen Koordinatensystem mit Anfangspunkt in  $L_4$  (also:  $x = \xi, y = \eta - \sqrt{3}$ ).

Für einen gegebenen Anfangswert  $\eta_0$  erhält man für die Inangsetzung der numerischen Integration die Anfangswerte der Geschwindigkeitskomponenten  $\left(\frac{dx}{dt}\right)_0$  und  $\left(\frac{dy}{dt}\right)_0$  mit Hilfe der Anfangsgeschwindigkeit  $V_0$  und des — für jede Bewegung, die auf der  $y$ -Achse ( $\eta$ -Achse) anfängt, gleichen — Winkels  $\theta$  ( $= 57^\circ 42'.25$ ), den die Anfangsbewegung mit der  $x$ -Achse macht:

$$\begin{aligned} \left(\frac{dx}{dt}\right)_0 &= V_0 \cos \theta \\ \left(\frac{dy}{dt}\right)_0 &= V_0 \sin \theta. \end{aligned} \quad (1)$$

Einen Ausdruck für  $V_0$  erhalten wir mit Hilfe des Jacobischen Integrals der Bewegungsgleichungen.

In dem beweglichen Koordinatensystem mit Anfangspunkt im Schwerpunkt des Systems lauten die Bewegungsgleichungen in dem Kopenhagener Problem ( $m_1 = m_2$ ) und in den bei unseren Arbeiten gewählten Einheiten:

$$\begin{aligned} \frac{d^2 \xi}{dt^2} - 2 \frac{d\eta}{dt} &= \xi - 4 \left( \frac{\xi - 1}{r_1^3} + \frac{\xi + 1}{r_2^3} \right) \\ \frac{d^2 \eta}{dt^2} + 2 \frac{d\xi}{dt} &= \eta - 4 \left( \frac{\eta}{r_1^3} + \frac{\eta}{r_2^3} \right), \end{aligned} \quad (2)$$

wo  $r_1^2 = (\xi - 1)^2 + \eta^2$   
 $r_2^2 = (\xi + 1)^2 + \eta^2$ .

Das Jacobische Integral lautet:

$$V^2 = \left(\frac{d\xi}{dt}\right)^2 + \left(\frac{d\eta}{dt}\right)^2 = \xi^2 + \eta^2 + 8 \left( \frac{1}{r_1} + \frac{1}{r_2} \right) - K, \quad (3)$$

wo  $K$  die Integrationskonstante bedeutet.

Den Wert von  $K$  im vorliegenden Problem finden wir, wenn wir  $\xi = 0$ ,  $\eta = \sqrt{3}$ ,  $r_1 = r_2 = 2$  und  $V = 0$  setzen, was dem Anfangszustand der asymptotischen Bewegung ( $t = -\infty$ ) entspricht.

Wir erhalten:

$$K = 11.$$

Für die Geschwindigkeit  $V_0$  in einem Punkte  $\xi = 0$ ,  $\eta = \eta_0$  auf der  $\eta$ -Achse ergibt sich dann:

$$V_0^2 = \eta_0^2 + \frac{16}{\sqrt{1 + \eta_0^2}} - 11, \quad (4)$$

woraus wir für jeden beliebigen Wert von  $\eta_0$  den zugehörigen Wert von  $V_0$  berechnen können.

Für eine Anzahl Werte von  $\eta_0$  in der Nähe von  $\sqrt{3}$  ( $= 1.732\ 0508 \dots$ ) haben wir die folgende kleine Tafel berechnet, die das ganze zur Anwendung kommende Gebiet ausfüllt:

$\eta_0$	$V_0$	$f'$	$f''$
+ 1.700	- 0.048 1874.0	+ 7 5319.8	
1.705	0.040 6554.2	7 5265.7	- 54.1
1.710	0.033 1288.5	7 5211.7	54.0
1.715	0.025 6076.8	7 5157.5	54.2
1.720	0.018 0919.3	7 5103.4	54.1
1.725	0.010 5815.9	7 5049.2	54.2
1.730	- 0.003 0766.7	7 4995.1	54.1
1.735	+ 0.004 4228.4	7 4941.0	54.1
1.740	0.011 9169.4	7 4886.9	54.1
1.745	0.019 4056.3	7 4832.8	54.1
1.750	0.026 8889.1	7 4778.7	54.1
1.755	0.034 3667.8	+ 7 4724.5	- 54.2
+ 1.760	+ 0.041 8392.3		

Die Theorie des vorliegenden Problems soll an anderer Stelle ausführlich auseinandergesetzt werden. Hier kommt es ausschliesslich auf die numerischen Resultate an.

Die Rechnung fing naturgemäss immer in  $\xi, \eta$  an. In allen Fällen, wo die dritte, unendlich kleine, Masse in die Nähe einer der endlichen Massen kommt, wurde die Rechnung in den Thieleschen Koordinaten  $E, F$  fortgesetzt. Die zugehörigen  $\xi, \eta$ -Werte wurden nachträglich aus diesen  $E, F$ -Werten berechnet (bei dieser Umrechnung tritt in den  $\xi, \eta$  in einigen Fällen eine — unvermeidliche — Unsicherheit in der letzten Stelle auf).

In bezug auf die Genauigkeit der erlangten numerischen Resultate ist folgendes zu bemerken. Der Umstand, dass die Bahnrechnung in dem vorliegenden Problem für eine bedeutend grössere Anzahl Intervalle ausgeführt werden musste, als sonst im allgemeinen in unseren Arbeiten nötig ist, hat selbstverständlich auf die Genauigkeit am Schluss der Rechnung einen gewissen — übrigens wohl ziemlich unbedeutenden — Einfluss. Etwas mehr besagt es wohl, dass das erste Stück der Bahnen nach der infinitesimalen — also nicht ganz exakten — Formeln berechnet ist (über die zur Verfügung stehenden Mittel, sich gegen merkbare Fehler zu schützen, s. Publ. 47, p. 9 die Bemerkung über die Sätze 4, 5 und 6). Ich habe mich doch immer bemüht, durch Streichung der letzten Stelle die Unsicherheit der gegebenen Resultate zu beheben. Für das wesentliche der vorliegenden Untersuchung — den Nachweis der verschiedenen Klassen und Typen von Bahnen — spielt eine eventuell noch übrigbleibende kleine Unsicherheit in den Einzelergebnissen gar keine Rolle.

Es ist zu bemerken, dass die Werte von  $\eta_0$  bei den vier ersten als periodisch angegebenen Bahnen der exakten

Periodizität nicht ganz entsprechen, weil wir aus Rücksicht auf die in diesem Problem so wie so ausserordentlich umfassende Rechenarbeit darauf verzichten mussten, die Rechnungsgenauigkeit durch wiederholte Interpolation und wiederholte neue Bahnrechnung noch weiter zu treiben. In keinem Falle wird wohl die Unsicherheit in  $\eta_0$   $1^{1/2}$  Einheiten der vierten Dezimalstelle übersteigen.

An der Organisation der Rechenarbeit hat Herr Assistent JENS P. MØLLER teilgenommen. Für Ausführung der Rechenarbeit und sonstige Hilfe habe ich den Herren: Oberlehrer BENNEDSEN (Helsingør), Dr. BURMEISTER (München), Assistent JOHANNSEN (Kopenhagen), Admiral KORSAKOFF (Kopenhagen), Aktuar LØKKEGAARD (Kopenhagen), Dr. NOTEBOOM (Rathenow), Dr. SCHÜTTE (Frankfurt a/M), Dr. STAMMHAMMER (München), Dr. STOBBE (Neubabelsberg), Magister B. STRÖMGREN, ferner Frl. Dr. GÜSSOW (Neubabelsberg) und Frl. MACKEPFRANG (Kopenhagen) herzlichst zu danken. Dem Carlsbergfond bin ich für wirksame pekuniäre Unterstützung zur Ausführung der numerischen Rechenarbeit zu grossem Dank verpflichtet.

*Observatorium, Kopenhagen, Febr. 1929.*

ELIS STRÖMGREN.

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## Bahn 1.

$$\eta_0 = + 1.720$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.72000	5.2	+ 0.39695	+ 1.71782
0.2	- 0.00345	1.71816	5.4	0.41986	1.64962
0.4	0.00768	1.71661	5.6	0.42465	1.56657
0.6	0.01268	1.71551			
0.8	0.01838	1.71507	5.7	0.41858	1.51935
1.0	0.02465	1.71550	5.8	0.40595	1.46829
1.2	0.03129	1.71704	5.9	0.38608	1.41337
1.4	0.03799	1.71989	6.0	0.35826	1.35459
1.6	0.04441	1.72429	6.1	0.32181	1.29200
1.8	0.05005	1.73042	6.2	0.27604	1.22572
2.0	0.05437	1.73841	6.3	0.22023	1.15600
2.2	0.05672	1.74833	6.4	0.15357	1.08328
2.4	0.05640	1.76012	6.5	+ 0.07498	1.00828
2.6	0.05268	1.77364	6.6	- 0.01707	0.93206
2.8	0.04480	1.78856	6.7	0.12502	0.85585
3.0	0.03205	1.80440	6.8	0.25271	0.78073
3.2	- 0.01381	1.82048			
3.4	+ 0.01036	1.83588	6.70	0.12502	0.85585
3.6	0.04071	1.84950	6.75	0.18616	0.81811
3.8	0.07712	1.86004	6.80	0.25271	0.78073
4.0	0.11912	1.86603	6.85	0.32574	0.74363
4.2	0.16578	1.86587	6.90	0.40619	0.70655
4.4	0.21563	1.85794	6.95	0.49535	0.66884
4.6	0.26664	1.84060	7.00	0.59480	0.62922
4.8	0.31616	1.81232	7.05	- 0.70634	+ 0.58526
5.0	+ 0.36089	+ 1.77177			

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
7.00	— 0.59480	+ 0.62922	7.18	— 1.06187	+ 0.40626
7.02	0.63786	0.61234	7.20	1.12225	0.36056
7.04	0.68299	0.59457	7.22	1.18112	0.30695
7.06	0.73031	0.57560	7.24	1.23603	0.24499
7.08	0.77993	0.55505	7.26	1.28420	0.17533
7.10	0.83193	0.53243	7.28	1.32340	0.10002
7.12	0.88633	0.50712	7.30	1.35272	+ 0.02198
7.14	0.94304	0.47834	7.32	— 1.37271	— 0.05595
7.16	— 1.00176	+ 0.44510			

## Bahn 2.

$$\eta_0 = + 1.719$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.71900	1.8	— 0.05428	+ 1.73028
0.1	— 0.00176	1.71798	1.9	0.05684	1.73435
0.2	0.00374	1.71700	2.0	0.05897	1.73894
0.3	0.00592	1.71611	2.1	0.06056	1.74405
0.4	0.00833	1.71532	2.2	0.06153	1.74969
0.5	0.01094	1.71465	2.3	0.06178	1.75584
0.6	0.01376	1.71413	2.4	0.06120	1.76249
0.7	0.01676	1.71378	2.5	0.05970	1.76961
0.8	0.01994	1.71365	2.6	0.05718	1.77716
0.9	0.02328	1.71375	2.7	0.05352	1.78509
1.0	0.02674	1.71412	2.8	0.04864	1.79335
1.1	0.03030	1.71478	2.9	0.04243	1.80186
1.2	0.03393	1.71578	3.0	0.03481	1.81054
1.3	0.03758	1.71713	3.1	0.02570	1.81928
1.4	0.04121	1.71887	3.2	0.01504	1.82797
1.5	0.04475	1.72103	3.3	— 0.00276	1.83648
1.6	0.04816	1.72364	3.4	+ 0.01118	1.84466
1.7	— 0.05136	+ 1.72671	3.5	+ 0.02678	+ 1.85236

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
3.6	+ 0.04406	+ 1.85941	5.1	+ 0.41112	+ 1.74781
3.7	0.06299	1.86562	5.2	0.42904	1.71682
3.8	0.08351	1.87080	5.3	0.44340	1.68198
3.9	0.10556	1.87475	5.4	0.45353	1.64322
4.0	0.12900	1.87725	5.5	0.45875	1.60045
4.1	0.15372	1.87808	5.6	0.45834	1.55360
4.2	0.17951	1.87702	5.7	0.45156	1.50260
4.3	0.20617	1.87386	5.8	0.43767	1.44740
4.4	0.23344	1.86837	5.9	0.41593	1.38793
4.5	0.26102	1.86034	6.0	0.38560	1.32414
4.6	0.28857	1.84955	6.1	0.34597	1.25601
4.7	0.31571	1.83581	6.2	0.29632	1.18362
4.8	0.34202	1.81893	6.3	0.23593	1.10718
4.9	0.36704	1.79874	6.4	0.16394	1.02717
5.0	+ 0.39026	+ 1.77508	6.5	+ 0.07917	+ 0.94442

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.29633	+ 1.18362	+ 1.38045	- 1.01941
0.04	0.24040	1.11250	1.41055	0.96834
0.08	0.17944	1.04350	1.44683	0.91739
0.12	0.11410	0.97720	1.48923	0.86747
0.16	+ 0.04480	0.91376	1.53773	0.81944
0.20	- 0.02849	0.85368	1.59247	0.77419
0.24	0.10601	0.79708	1.65367	0.73252
0.28	0.18806	0.74408	1.72163	0.69523
0.32	0.27508	0.69458	1.79673	0.66303
0.36	0.36741	0.64827	1.87944	0.63656
0.40	0.46508	0.60445	1.97019	0.61632
0.44	0.56768	0.56200	2.06935	0.60273
0.48	0.67419	0.51920	2.17723	0.59595
0.52	0.78268	0.47370	2.29388	0.59588
0.56	- 0.89030	+ 0.42271	+ 2.41907	- 0.60216

$\psi$	$\xi$	$\eta$	$E$	$F$
0.60	— 0.99308	+ 0.36328	+ 2.55223	— 0.61423
0.64	1.08627	0.29275	2.69234	0.63129
0.68	1.16469	0.20928	2.83791	0.65253
0.72	1.22351	0.11242	2.98703	0.67726
0.76	1.25909	+ 0.00324	3.13740	0.70514
0.80	1.27011	— 0.11614	3.28644	0.73628
0.84	1.25768	0.24293	3.43144	0.77123
0.88	1.22571	0.37472	3.56959	0.81095
0.92	1.18000	0.50981	3.69814	0.85648
0.96	1.12790	0.64754	3.81438	0.90876
1.00	1.07735	0.78777	3.91566	0.96833
1.04	1.03707	0.93025	3.99924	1.03505
1.08	1.01640	1.07390	4.06230	1.10799
1.12	1.02537	1.21503	4.10187	1.18522
1.16	1.07480	1.34594	4.11492	1.26372
1.20	1.17408	1.45297	4.09884	1.33926
1.24	1.32664	1.51545	4.05228	1.40658
1.28	1.52311	1.50841	3.97609	1.45949
1.32	1.73536	1.41319	3.87500	1.49224
1.36	— 1.9204	— 1.2297	+ 3.7573	— 1.5000

## Bahn 3.

$$\eta_0 = + 1.716$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.71600	1.4	— 0.05103	+ 1.71565
0.2	— 0.00460	1.71353	1.6	0.05986	1.72152
0.4	0.01025	1.71143	1.8	0.06735	1.72973
0.6	0.01695	1.70993	2.0	0.07325	1.74045
0.8	0.02460	1.70931	2.2	0.07651	1.75377
1.0	0.03303	1.70985	2.4	0.07620	1.76963
1.2	— 0.04197	+ 1.71186	2.6	— 0.07128	+ 1.78784

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.8	-0.06078	+ 1.80795	4.0	+ 0.15859	+ 1.91181
3.0	0.04372	1.82930	4.2	0.22083	1.91146
3.2	-0.01929	1.85092	4.4	0.28720	1.90066
3.4	+ 0.01310	1.87161	4.6	0.35491	1.87740
3.6	0.05373	1.88987	4.8	+ 0.42042	+ 1.83964
3.8	+ 0.10246	+ 1.90382			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.3548	+ 1.8774	+ 1.4050	- 1.3996
0.05	0.4286	1.8332	1.3674	1.3848
0.10	0.4911	1.7713	1.3324	1.3615
0.15	0.5360	1.6931	1.3024	1.3289
0.20	0.5590	1.6020	1.2798	1.2867
0.25	0.5589	1.5020	1.2664	1.2353
0.30	0.5368	1.3970	1.2635	1.1756
0.35	0.4958	1.2904	1.2713	1.1089
0.40	0.4401	1.1845	1.2899	1.0368
0.45	0.3739	1.0808	1.3186	0.9611
0.50	0.3005	0.9804	1.3570	0.8837
0.55	0.2223	0.8842	1.4045	0.8063
0.60	0.1405	0.7928	1.4608	0.7308
0.65	+ 0.0551	0.7069	1.5258	0.6589
0.70	- 0.0344	0.6270	1.6000	0.5920
0.75	0.1292	0.5535	1.6839	0.5316
0.80	0.2304	0.4868	1.7786	0.4790
0.85	0.3389	0.4272	1.8851	0.4353
0.90	0.4546	0.3738	2.0046	0.4011
0.95	0.5760	0.3254	2.1381	0.3768
1.00	0.6994	0.2795	2.2862	0.3623
1.05	0.8188	0.2326	2.4486	0.3565
1.10	0.9254	0.1807	2.6244	0.3577
1.15	- 1.0091	+ 0.1206	+ 2.8112	- 0.3636

$\psi$	$\xi$	$\eta$	$E$	$F$
1.20	— 1.0601	+ 0.0516	+ 3.0055	— 0.3720
1.25	— 1.0716	— 0.0240	+ 3.2030	— 0.3815

**Bahn 4.**  
Periodische Bahn I.

$$\eta_0 = + 1.715$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.71500	3.4	+ 0.01442	+ 1.87898
0.2	— 0.00488	1.71238	3.6	0.05726	1.89805
0.4	0.01089	1.71017	3.8	0.10854	1.91267
0.6	0.01799	1.70862	4.0	0.16754	1.92076
0.8	0.02609	1.70799	4.2	0.23291	1.92014
1.0	0.03498	1.70861	4.4	0.30250	1.90855
1.2	0.04439	1.71079	4.6	0.37341	1.88384
1.4	0.05391	1.71484	4.8	0.44188	1.84404
1.6	0.06300	1.72108	5.0	0.50327	1.78746
1.8	0.07102	1.72977	5.2	0.55210	1.71271
2.0	0.07716	1.74110	5.4	0.58209	1.61870
2.2	0.08053	1.75515	5.6	0.58620	1.50433
2.4	0.08011	1.77188	5.8	0.55692	1.36818
2.6	0.07485	1.79106	6.0	0.48680	1.20789
2.8	0.06368	1.81221	6.2	0.3696	1.0203
3.0	0.04561	1.83462	6.4	+ 0.2009	0.8042
3.2	— 0.01978	+ 1.85732	6.6	— 0.0267	+ 0.5707

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.48683	+ 1.20786	+ 1.26440	— 1.05810
0.05	0.42333	1.10009	1.28865	0.98053
0.10	+ 0.35201	+ 0.99549	+ 1.32270	— 0.90028

$\psi$	$\xi$	$\eta$	$E$	$F$
0.15	+ 0.27574	+ 0.89489	+ 1.36583	- 0.81925
0.20	0.19627	0.79895	1.41756	0.73923
0.25	0.11411	0.70822	1.47767	0.66189
0.30	+ 0.02884	0.62321	1.54632	0.58878
0.35	- 0.06061	0.54449	1.62404	0.52133
0.40	0.15561	0.47261	1.71169	0.46085
0.45	0.25733	0.40797	1.81034	0.40851
0.50	0.36644	0.35074	1.92121	0.36527
0.55	0.48244	0.30053	2.04547	0.33177
0.60	0.60305	0.25599	2.18404	0.30813
0.65	0.72381	0.21472	2.33733	0.29384
0.70	0.83756	0.17333	2.50493	0.28757
0.75	0.93503	0.12832	2.68534	0.28728
0.80	1.00591	0.07737	2.87588	0.29056
0.85	1.04145	+ 0.02062	3.07271	0.29532
0.90	1.03669	- 0.03940	3.27119	0.30038
0.95	0.99240	0.09919	3.46643	0.30599
1.00	0.91435	0.15659	3.65490	0.31372
1.05	- 0.81366	- 0.21069	+ 3.82995	- 0.32586

Bahn 5.  
Periodische Bahn II.

$$\eta_0 = + 1.711$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.71100	1.4	- 0.06668	+ 1.71072
0.2	- 0.00603	1.70778	1.6	0.07797	1.71842
0.4	0.01344	1.70505	1.8	0.08794	1.72914
0.6	0.02221	1.70312	2.0	0.09560	1.74314
0.8	0.03221	1.70234	2.2	0.09982	1.76052
1.0	0.04322	1.70308	2.4	0.09935	1.78121
1.2	- 0.05487	+ 1.70573	2.6	- 0.09290	+ 1.80491

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.8	-0.07914	+ 1.83106	4.8	+ 0.53961	+ 1.86891
3.0	0.05686	1.85873	4.9	0.57819	1.83710
3.2	-0.02502	1.88670	5.0	0.61375	1.80008
3.4	+ 0.01711	1.91335	5.1	0.64540	1.75767
3.6	0.06982	1.93668	5.2	0.67222	1.70973
3.8	0.13284	1.95442	5.3	0.69320	1.65611
4.0	0.20525	1.96403	5.4	0.70728	1.59665
4.2	0.28523	1.96287	5.5	0.71333	1.53117
			5.6	0.71018	1.45942
4.3	0.32730	1.95741	5.7	0.69664	1.38101
4.4	0.37020	1.94826	5.8	0.67149	1.29541
4.5	0.41347	1.93512	5.9	0.63362	1.20181
4.6	0.45654	1.91769	6.0	+ 0.58209	+ 1.09912
4.7	+ 0.49881	+ 1.89570			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.58209	+ 1.09912	+ 1.18612	- 1.00684
0.05	0.51214	0.97912	1.20921	0.91411
0.10	0.43812	0.86350	1.24124	0.81821
0.15	0.36328	0.75240	1.28102	0.72103
0.20	0.28923	0.64607	1.32764	0.62431
0.25	0.21612	0.54467	1.38065	0.52957
0.30	0.14311	0.44847	1.44003	0.43818
0.35	+ 0.06861	0.35789	1.50617	0.35136
0.40	- 0.00941	0.27359	1.57988	0.27029
0.45	0.09307	0.19649	1.66223	0.19606
0.50	0.18430	0.12792	1.75459	0.12975
0.55	0.28440	0.06948	1.85840	0.07240
0.60	0.39350	+ 0.02281	1.97510	- 0.02481
0.65	0.51000	- 0.01067	2.10593	+ 0.01248
0.70	0.62996	0.03070	2.25167	0.03955
0.75	- 0.74691	- 0.03814	+ 2.41237	+ 0.05722



$\psi$	$\xi$	$\eta$	$E$	$F$
0.80	— 0.85208	— 0.03538	+ 2.58708	+ 0.06715
0.85	0.93547	0.02577	2.77370	0.07164
0.90	0.98775	— 0.01258	2.96887	0.07314
0.95	1.00235	+ 0.00196	3.16827	0.07347
1.00	0.97730	0.01636	3.36700	0.07319
1.05	— 0.91592	+ 0.02902	+ 3.56029	+ 0.07132

## Bahn 6.

$$\eta_0 = + 1.710$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.71000	3.4	+ 0.01749	+ 1.92183
0.2	— 0.00631	1.70662	3.5	0.04367	1.93462
0.4	0.01408	1.70377	3.6	0.07262	1.94625
0.6	0.02326	1.70174	3.7	0.10426	1.95642
0.8	0.03374	1.70092	3.8	0.13852	1.96480
1.0	0.04527	1.70168	3.9	0.17523	1.97106
1.2	0.05749	1.70446	4.0	0.21419	1.97485
1.4	0.06987	1.70967	4.1	0.25515	1.97581
1.6	0.08172	1.71771	4.2	0.29780	1.97360
1.8	0.09218	1.72894	4.3	0.34176	1.96788
2.0	0.10023	1.74359	4.4	0.38658	1.95831
2.2	0.10468	1.76178	4.5	0.43177	1.94457
2.4	0.10423	1.78346	4.6	0.47675	1.92636
2.6	0.09751	1.80828	4.7	0.52089	1.90341
2.8	0.08315	1.83566	4.8	0.56347	1.87547
			4.9	0.60373	1.84231
2.9	0.07269	1.85003	5.0	0.64082	1.80374
3.0	0.05985	1.86465	5.1	0.67384	1.75958
3.1	0.04451	1.87936	5.2	0.70179	1.70973
3.2	0.02656	1.89394	5.3	0.72362	1.65398
3.3	— 0.00591	+ 1.90818	5.4	+ 0.73823	+ 1.59221

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
5.5	+ 0.74443	+ 1.52421	5.8	+ 0.70010	+ 1.27926
5.6	0.74099	1.44970	5.9	0.66020	1.18176
5.7	+ 0.72664	+ 1.36826	6.0	+ 0.60597	+ 1.07442

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.60597	+ 1.07442	+ 1.16590	— 0.99592
0.05	0.53470	0.95185	1.18833	0.89962
0.10	0.46033	0.83382	1.21943	0.79999
0.15	0.38615	0.72047	1.25787	0.69893
0.20	0.31376	0.61179	1.30265	0.59815
0.25	0.24328	0.50785	1.35325	0.49912
0.30	0.17376	0.40914	1.40956	0.40317
0.35	0.10350	0.31499	1.47196	0.31146
0.40	+ 0.03039	0.22692	1.54115	0.22511
0.45	— 0.04822	0.14555	1.61823	0.14520
0.50	0.13371	0.07221	1.70455	0.07284
0.55	0.22873	+ 0.00910	1.80155	— 0.00914
0.60	0.33378	— 0.04230	1.91074	+ 0.04486
0.65	0.44817	0.07919	2.03353	0.08839
0.70	0.56889	0.10011	2.17092	0.12101
0.75	0.69051	0.10473	2.32336	0.14299
0.80	0.80504	0.09461	2.49046	0.15547
0.85	0.90265	0.07281	2.67073	0.16036
0.90	0.97337	0.04444	2.86146	0.16008
0.95	1.00886	— 0.01299	3.05884	0.15689
1.00	1.00475	+ 0.01779	3.25826	0.15214
1.05	— 0.96055	+ 0.04543	+ 3.45778	+ 0.14574

## Bahn 7.

$$\eta_0 = +1.708916$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.70892	3.2	- 0.02781	+ 1.90178
0.1	- 0.00312	1.70710	3.3	- 0.00616	1.91669
0.2	0.00663	1.70538	3.4	+ 0.01836	1.93096
0.3	0.01051	1.70379	3.5	0.04580	1.94433
0.4	0.01478	1.70238	3.6	0.07611	1.95648
0.5	0.01942	1.70119	3.7	0.10926	1.96708
0.6	0.02442	1.70026	3.8	0.14512	1.97581
0.7	0.02976	1.69965	3.9	0.18354	1.98230
0.8	0.03541	1.69940	4.0	0.22432	1.98619
0.9	0.04134	1.69957	4.1	0.26716	1.98713
1.0	0.04751	1.70021	4.2	0.31176	1.98474
1.1	0.05386	1.70138	4.3	0.35771	1.97867
1.2	0.06033	1.70314	4.4	0.40455	1.96858
1.3	0.06684	1.70553	4.5	0.45175	1.95413
1.4	0.07331	1.70861	4.6	0.49871	1.93502
1.5	0.07964	1.71244	4.7	0.54477	1.91097
1.6	0.08573	1.71706	4.8	0.58919	1.88172
1.7	0.09146	1.72251	4.9	0.63116	1.84705
1.8	0.09670	1.72884	5.0	0.66978	1.80677
1.9	0.10131	1.73606	5.1	0.70412	1.76071
2.0	0.10513	1.74421	5.2	0.73314	1.70872
2.1	0.10802	1.75328	5.3	0.75574	1.65067
2.2	0.10979	1.76329	5.4	0.77076	1.58639
2.3	0.11028	1.77421	5.5	0.77693	1.51567
2.4	0.10931	1.78601	5.6	0.77297	1.43821
2.5	0.10669	1.79864	5.7	0.75753	1.35353
2.6	0.10225	1.81204	5.8	0.72926	1.26090
2.7	0.09580	1.82610	5.9	0.68690	1.15920
2.8	0.08717	1.84073	6.0	0.62948	1.04680
2.9	0.07619	1.85579	6.1	0.55662	0.92153
3.0	0.06273	1.87111	6.2	+ 0.46901	+ 0.78093
3.1	- 0.04664	+ 1.88651			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.62946	+ 1.04681	+ 1.14489	— 0.98324
0.05	0.55676	0.92182	1.16670	0.88319
0.10	0.48204	0.80160	1.19686	0.77968
0.15	0.40866	0.68610	1.23391	0.67461
0.20	0.33812	0.57517	1.27675	0.56965
0.25	0.27053	0.46876	1.32475	0.46624
0.30	0.20479	0.36688	1.37778	0.36563
0.35	0.13914	0.26970	1.43613	0.26891
0.40	+ 0.07134	0.17765	1.50050	0.17716
0.45	— 0.00111	0.09159	1.57191	0.09146
0.50	0.08080	+ 0.01285	1.65168	— 0.01289
0.55	0.16993	— 0.05654	1.74128	+ 0.05734
0.60	0.27002	0.11398	1.84227	0.11804
0.65	0.38119	0.15646	1.95614	0.16805
0.70	0.50157	0.18119	2.08410	0.20652
0.75	0.62671	0.18637	2.22694	0.23310
0.80	0.74950	0.17219	2.38472	0.24821
0.85	0.86058	0.14132	2.55659	0.25320
0.90	0.94962	0.09869	2.74059	0.25022
0.95	1.00719	0.05040	2.93363	0.24174
1.00	1.02648	— 0.00232	3.13159	0.22984
1.05	— 1.00523	+ 0.04059	+ 3.32973	+ 0.21547

## Bahn 8.

$$\eta_0 = + 1.705$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.70500	0.5	— 0.02272	+ 1.69595
0.1	— 0.00366	1.70287	0.6	0.02858	1.69486
0.2	0.00775	1.70086	0.7	0.03483	1.69414
0.3	0.01230	1.69900	0.8	0.04145	1.69385
0.4	— 0.01729	+ 1.69735	0.9	— 0.04840	+ 1.69404

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
1.0	-0.05563	+ 1.69479	3.4	+ 0.02089	+ 1.96450
1.1	0.06307	1.69615	3.5	0.05289	1.98001
1.2	0.07065	1.69820	3.6	0.08823	1.99407
1.3	0.07828	1.70100	3.7	0.12683	2.00630
1.4	0.08588	1.70460	3.8	0.16857	2.01630
1.5	0.09331	1.70908	3.9	0.21326	2.02367
1.6	0.10046	1.71448	4.0	0.26064	2.02799
1.7	0.10720	1.72086	4.1	0.31038	2.02884
1.8	0.11335	1.72826	4.2	0.36210	2.02582
1.9	0.11877	1.73672	4.3	0.41533	2.01851
2.0	0.12327	1.74625	4.4	0.46954	2.00654
2.1	0.12668	1.75688	4.5	0.52410	1.98954
2.2	0.12878	1.76860	4.6	0.57832	1.96718
2.3	0.12937	1.78138	4.7	0.63143	1.93918
2.4	0.12825	1.79520	4.8	0.68256	1.90526
2.5	0.12520	1.80999	4.9	0.73080	1.86521
2.6	0.12001	1.82567	5.0	0.77510	1.81885
2.7	0.11247	1.84213	5.1	0.81437	1.76604
2.8	0.10239	1.85924	5.2	0.84742	1.70664
2.9	0.08956	1.87685	5.3	0.87295	1.64055
3.0	0.07382	1.89475	5.4	0.88960	1.56761
3.1	0.05502	1.91273	5.5	0.89588	1.48759
3.2	0.03302	1.93054	5.6	0.89022	1.40012
3.3	-0.00774	+ 1.94790	5.7	+ 0.87095	+ 1.30453

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 0.89024	+ 1.40013	+ 1.07703	- 1.24370
0.05	0.85472	1.25034	1.05982	1.15727
0.10	0.79537	1.10522	1.05624	1.05978
0.15	0.72262	0.96618	1.06451	0.95356
0.20	0.64520	0.83332	1.08236	0.84098
0.25	+ 0.56936	+ 0.70603	+ 1.10746	- 0.72424

$\psi$	$\xi$	$\eta$	$E$	$F$
0.30	+ 0.49879	+ 0.58356	+ 1.13783	— 0.60525
0.35	0.43505	0.46525	1.17194	0.48557
0.40	0.37814	0.35045	1.20884	0.36648
0.45	0.32703	0.23860	1.24807	0.24901
0.50	0.27993	0.12918	1.28967	0.13406
0.55	0.23457	+ 0.02183	1.33408	— 0.02246
0.60	0.18826	— 0.08348	1.38210	+ 0.08489
0.65	0.13792	0.18626	1.43484	0.18691
0.70	0.08017	0.28517	1.49364	0.28226
0.75	+ 0.01157	0.37771	1.55998	0.36928
0.80	— 0.07105	0.45993	1.63537	0.44596
0.85	0.16978	0.52635	1.72123	0.50997
0.90	0.28465	0.57046	1.81865	0.55889
0.95	0.41273	0.58580	1.92830	0.59043
1.00	0.54782	0.56784	2.05037	0.60286
1.05	0.68110	0.51602	2.18456	0.59542
1.10	0.80284	0.43495	2.33022	0.56861
1.15	0.90446	0.33426	2.48647	0.52428
1.20	0.97994	0.22681	2.65215	0.46545
1.25	1.02590	0.12620	2.82566	0.39579
1.30	1.04145	— 0.04427	3.00469	0.31897
1.35	— 1.02740	+ 0.01072	+ 3.18606	+ 0.23794

## Bahn 9.

$$\eta_0 = + 1.700$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.70000	0.5	— 0.02693	+ 1.68928
0.1	— 0.00433	1.69748	0.6	0.03387	1.68798
0.2	0.00919	1.69509	0.7	0.04128	1.68713
0.3	0.01458	1.69289	0.8	0.04913	1.68677
0.4	— 0.02049	+ 1.69093	0.9	— 0.05738	+ 1.68699

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
1.0	-0.06595	+ 1.68787	3.4	+ 0.02370	+ 2.00686
1.1	0.07478	1.68948	3.5	0.06144	2.02506
1.2	0.08379	1.69190	3.6	0.10308	2.04150
1.3	0.09286	1.69520	3.7	0.14854	2.05573
1.4	0.10188	1.69946	3.8	0.19765	2.06730
1.5	0.11071	1.70476	3.9	0.25018	2.07572
1.6	0.11922	1.71115	4.0	0.30581	2.08051
1.7	0.12723	1.71870	4.1	0.36416	2.08120
1.8	0.13456	1.72747	4.2	0.42478	2.07730
1.9	0.14102	1.73748	4.3	0.48709	2.06837
2.0	0.14640	1.74878	4.4	0.55047	2.05398
2.1	0.15046	1.76137	4.5	0.61419	2.03374
2.2	0.15299	1.77525	4.6	0.67744	2.00729
2.3	0.15373	1.79040	4.7	0.73932	1.97434
2.4	0.15243	1.80678	4.8	0.79882	1.93463
2.5	0.14885	1.82430	4.9	0.85486	1.88796
2.6	0.14273	1.84288	5.0	0.90626	1.83420
2.7	0.13383	1.86238	5.1	0.95172	1.77325
2.8	0.12191	1.88264	5.2	0.98987	1.70504
2.9	0.10674	1.90346	5.3	1.01920	1.62953
3.0	0.08814	1.92463	5.4	1.03807	1.54664
3.1	0.06592	1.94587	5.5	1.04470	1.45619
3.2	0.03994	1.96689	5.6	1.03714	1.35778
3.3	-0.01008	+ 1.98734	5.7	+ 1.01328	+ 1.25057

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.03713	+ 1.35778	+ 0.99449	- 1.25920
0.05	0.99360	1.19075	0.96954	1.16331
0.10	0.92365	1.03299	0.95963	1.05463
0.15	0.84095	0.88489	0.96217	0.93586
0.20	0.75647	0.74525	0.97399	0.80961
0.25	+ 0.67780	+ 0.61231	+ 0.99196	- 0.67825

$\psi$	$\xi$	$\eta$	$E$	$F$
0.30	+ 0.60913	+ 0.48451	+ 1.01339	— 0.54374
0.35	0.55240	0.36052	1.03622	0.40760
0.40	0.50782	0.23914	1.05902	0.27096
0.45	0.47474	+ 0.11922	1.08098	— 0.13467
0.50	0.45198	— 0.00055	1.10181	+ 0.00062
0.55	0.43807	0.12133	1.12171	0.13428
0.60	0.43121	0.24433	1.14127	0.26561
0.65	0.42918	0.37052	1.16151	0.39365
0.70	0.42903	0.50046	1.18377	0.51708
0.75	0.42679	0.63376	1.20966	0.63407
0.80	0.41734	0.76847	1.24090	0.74222
0.85	0.39481	0.90052	1.27904	0.83849
0.875	0.37683	0.96347	1.30102	0.88111
0.900	0.35362	1.02287	1.32501	0.91944
0.925	0.32487	1.07741	1.35093	0.95304
0.950	0.29059	1.12570	1.37863	0.98147
0.975	0.25114	1.16627	1.40786	1.00436
1.000	0.20729	1.19784	1.43825	1.02137
1.025	0.16016	1.21936	1.46937	1.03229
1.050	0.11118	1.23000	1.50071	1.03697
1.075	0.06195	1.22955	1.53171	1.03537
1.100	+ 0.01411	1.21815	1.56183	1.02758
1.125	— 0.03079	1.19637	1.59055	1.01379
1.150	0.07155	1.16512	1.61739	0.99428
1.175	0.10721	1.12570	1.64196	0.96942
1.200	0.13721	1.07945	1.66396	0.93964
1.225	0.16134	1.02774	1.68319	0.90539
1.250	0.17973	0.97193	1.69952	0.86718
1.275	0.19271	0.91318	1.71292	0.82549
1.300	0.20077	0.85257	1.72342	0.78080
1.325	0.20449	0.79092	1.73108	0.73359
1.350	0.20449	0.72889	1.73601	0.68429
1.375	0.20132	0.66698	1.73834	0.63328
1.400	— 0.19552	— 0.60559	+ 1.73819	+ 0.58094



$\psi$	$\xi$	$\eta$	$E$	$F$
1.425	-0.18755	-0.54492	+ 1.73571	+ 0.52759
1.450	0.17773	0.48513	1.73100	0.47353
1.475	0.16636	0.42632	1.72416	0.41902
1.500	0.15362	0.36852	1.71526	0.36430
1.525	0.13961	0.31173	1.70437	0.30956
1.550	0.12436	0.25593	1.69151	0.25504
1.575	0.10782	0.20109	1.67668	0.20088
1.600	0.08991	0.14721	1.65986	0.14726
1.625	0.07046	0.09427	1.64100	0.09436
1.650	0.04926	-0.04230	1.62003	+ 0.04234
1.675	-0.02605	+ 0.00862	+ 1.59686	-0.00863

## Bahn 10.

$$\eta_0 = + 1.736$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.73600	1.6	+ 0.01445	+ 1.73455
0.1	+ 0.00053	1.73631	1.7	0.01540	1.73362
0.2	0.00113	1.73660	1.8	0.01627	1.73254
0.3	0.00179	1.73687	1.9	0.01703	1.73131
0.4	0.00252	1.73711	2.0	0.01765	1.72993
0.5	0.00331	1.73730	2.1	0.01811	1.72838
0.6	0.00416	1.73746	2.2	0.01838	1.72668
0.7	0.00507	1.73756	2.3	0.01844	1.72483
0.8	0.00602	1.73759	2.4	0.01825	1.72282
0.9	0.00703	1.73756	2.5	0.01778	1.72067
1.0	0.00806	1.73744	2.6	0.01700	1.71839
1.1	0.00913	1.73724	2.7	0.01588	1.71599
1.2	0.01021	1.73693	2.8	0.01439	1.71348
1.3	0.01130	1.73652	2.9	0.01250	1.71089
1.4	0.01238	1.73599	3.0	0.01017	1.70825
1.5	+ 0.01344	+ 1.73534	3.1	+ 0.00740	+ 1.70557

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
3.2	+ 0.00414	+ 1.70290	6.6	- 0.01430	+ 1.98608
3.3	+ 0.00038	1.70026	6.7	+ 0.01914	2.00585
3.4	- 0.00389	1.69771	6.8	0.05656	2.02433
3.5	0.00869	1.69528	6.9	0.09792	2.04111
3.6	0.01403	1.69304	7.0	0.14313	2.05574
3.7	0.01990	1.69103	7.1	0.19203	2.06773
3.8	0.02629	1.68932	7.2	0.24440	2.07663
3.9	0.03320	1.68797	7.3	0.29994	2.08194
4.0	0.04058	1.68704	7.4	0.35827	2.08318
4.1	0.04841	1.68662	7.5	0.41893	2.07987
4.2	0.05664	1.68676	7.6	0.48137	2.07156
4.3	0.06521	1.68755	7.7	0.54497	2.05782
4.4	0.07405	1.68906	7.8	0.60902	2.03824
4.5	0.08307	1.69138	7.9	0.67270	2.01248
4.6	0.09218	1.69457	8.0	0.73511	1.98021
4.7	0.10126	1.69872	8.1	0.79527	1.94118
4.8	0.11018	1.70390	8.2	0.85210	1.89520
4.9	0.11878	1.71018	8.3	0.90442	1.84210
5.0	0.12690	1.71762	8.4	0.95095	1.78180
5.1	0.13437	1.72626	8.5	0.99031	1.71423
5.2	0.14099	1.73616	8.6	1.02100	1.63936
5.3	0.14655	1.74735	8.7	1.04140	1.55710
5.4	0.15082	1.75984	8.8	1.04975	1.46729
5.5	0.15358	1.77362	8.9	1.04409	1.36958
5.6	0.15457	1.78869			
5.7	0.15355	1.80499	8.70	1.04140	1.55708
5.8	0.15026	1.82246	8.75	1.04720	1.51315
5.9	0.14446	1.84101	8.80	1.04975	1.46729
6.0	0.13589	1.86050	8.85	1.04880	1.41947
6.1	0.12431	1.88077	8.90	1.04409	1.36959
6.2	0.10951	1.90165	8.95	1.03536	1.31756
6.3	0.09126	1.92290	9.00	1.02231	1.26322
6.4	0.06941	1.94426	9.05	1.00467	1.20638
6.5	- 0.04380	+ 1.96543	9.10	+ 0.98212	+ 1.14673

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
9.15	+ 0.95438	+ 1.08390	9.400	+ 0.73176	+ 0.69536
9.20	0.92118	1.01733	9.425	0.70245	0.64587
9.25	0.88231	0.94633	9.450	0.67239	0.59352
9.30	0.83764	0.86991	9.475	0.64194	0.53804
9.35	0.78728	0.78681	9.500	0.61158	0.47917
9.40	0.73178	0.69536	9.525	0.58186	0.41677
9.45	0.67237	0.59355	9.550	0.55348	0.35080
			9.575	0.52719	0.28142
9.300	0.83763	0.86991	9.600	0.50375	0.20912
9.325	0.81315	0.82929	9.625	0.48384	0.13455
9.350	0.78728	0.78681	9.650	0.46774	+ 0.05864
9.375	+ 0.76011	+ 0.74225	9.675	+ 0.45562	- 0.01753

**Bahn 11.**  
Periodische Bahn III.

$$\eta_0 = + 1.7368865$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.73689	2.8	+ 0.01762	+ 1.70931
0.2	+ 0.00138	1.73762	3.0	0.01246	1.70290
0.4	0.00308	1.73824	3.2	+ 0.00507	1.69635
0.6	0.00509	1.73868	3.4	- 0.00477	1.69001
0.8	0.00737	1.73885	3.6	0.01718	1.68430
1.0	0.00988	1.73866	3.8	0.03220	1.67974
1.2	0.01252	1.73804	4.0	0.04971	1.67694
1.4	0.01518	1.73688	4.2	0.06941	1.67657
1.6	0.01771	1.73511	4.4	0.09080	1.67936
1.8	0.01993	1.73265	4.6	0.11309	1.68609
2.0	0.02162	1.72945	4.8	0.13524	1.69749
2.2	0.02252	1.72548	5.0	0.15585	1.71427
2.4	0.02235	1.72074	5.2	0.17324	1.73697
2.6	+ 0.02082	+ 1.71532	5.4	- 0.18541	+ 1.76597

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
5.6	— 0.19011	+ 1.80132	8.0	+ 0.88629	+ 2.03034
5.8	0.18493	1.84270	8.1	0.95834	1.98321
6.0	0.16740	1.88928	8.2	1.02632	1.92804
6.2	0.13517	1.93963	8.3	1.08887	1.86478
6.4	0.08620	1.99165	8.4	1.14449	1.79344
6.6	— 0.01896	2.04254	8.5	1.19154	1.71412
6.8	+ 0.06734	2.08882	8.6	1.22829	1.62695
7.0	0.17255	2.12646	8.7	1.25278	1.53208
7.2	0.29533	2.15102	8.8	1.26289	1.42958
7.4	0.43303	2.15789	8.9	1.25618	1.31931
7.6	0.58150	2.14261	9.0	+ 1.22986	+ 1.20066
7.8	+ 0.73503	+ 2.10116			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.22986	+ 1.20067	+ 0.85655	— 1.24316
0.04	1.17208	1.05400	0.83229	1.15262
0.08	1.09803	0.91916	0.81882	1.05293
0.12	1.01716	0.79482	0.81406	0.94574
0.16	0.93698	0.67887	0.81570	0.83265
0.20	0.86286	0.56933	0.82146	0.71509
0.24	0.79818	0.46449	0.82932	0.59425
0.28	0.74493	0.36313	0.83755	0.47112
0.32	0.70408	0.26430	0.84483	0.34644
0.36	0.67600	0.16723	0.85016	0.22078
0.40	0.66077	+ 0.07131	0.85287	— 0.09454
0.44	0.65836	— 0.02405	0.85261	+ 0.03194
0.48	0.66882	0.11942	0.84930	0.15840
0.52	+ 0.69225	— 0.21536	+ 0.84313	+ 0.28455

## Bahn 12.

$$\eta_0 = +1.737$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.73700	4.4	- 0.09293	+ 1.67824
0.2	+ 0.00142	1.73776	4.6	0.11572	1.68513
0.4	0.00315	1.73839	4.8	0.13836	1.69681
0.6	0.00521	1.73884	5.0	0.15944	1.71398
0.8	0.00754	1.73901	5.2	0.17721	1.73721
1.0	0.01010	1.73882	5.4	0.18964	1.76688
1.2	0.01281	1.73818	5.6	0.19442	1.80305
1.4	0.01553	1.73700	5.8	0.18908	1.84538
1.6	0.01812	1.73518	6.0	0.17110	1.89302
1.8	0.02039	1.73266	6.2	0.13808	1.94450
2.0	0.02210	1.72938	6.4	0.08796	1.99766
2.2	0.02301	1.72532	6.6	- 0.01916	2.04962
2.4	0.02283	1.72048	6.8	+ 0.06911	2.09684
2.6	0.02125	1.71493	7.0	0.17665	2.13517
2.8	0.01797	1.70879	7.2	0.30210	2.16007
3.0	0.01269	1.70224	7.4	0.44273	2.16686
3.2	+ 0.00512	1.69555	7.6	0.59428	2.15098
3.4	- 0.00494	1.68907	7.8	0.75091	2.10838
3.6	0.01764	1.68324	8.0	0.90515	2.03585
3.8	0.03300	1.67859	8.2	1.04787	1.93131
4.0	0.05091	1.67574	8.4	1.16824	1.79402
4.2	- 0.07106	+ 1.67537	8.6	+ 1.25355	+ 1.62458

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.04788	+ 1.93130	+ 1.11352	- 1.50980
0.04	1.17351	1.78625	1.03637	1.47695
0.08	1.25435	1.62219	0.96713	1.43033
0.12	1.28761	1.45180	0.90881	1.37000
0.16	1.27753	1.28559	0.86314	1.29666
0.20	+ 1.23317	+ 1.12974	+ 0.83043	- 1.21148

$\psi$	$\xi$	$\eta$	$E$	$F$
0.24	+ 1.16565	+ 0.98660	+ 0.80973	— 1.11600
0.28	1.08575	0.85560	0.79922	1.01188
0.32	1.00249	0.73480	0.79662	0.90082
0.36	0.92272	0.62186	0.79951	0.78436
0.40	0.85098	0.51478	0.80562	0.66388
0.44	0.79017	0.41198	0.81300	0.54048
0.48	0.74180	0.31228	0.82005	0.41508
0.52	0.70657	0.21484	0.82552	0.28833
0.56	0.68470	0.11898	0.82856	0.16075
0.60	0.67627	+ 0.02410	0.82860	— 0.03269
0.64	0.68135	— 0.07031	0.82542	+ 0.09554
0.68	0.70005	0.16475	0.81905	0.22366
0.72	0.73260	0.25974	0.80987	0.35137
0.76	0.77908	0.35581	0.79854	0.47826
0.80	0.83936	0.45369	0.78610	0.60380
0.84	0.91272	0.55436	0.77400	0.72725
0.88	0.99737	0.65930	0.76406	0.84770
0.92	1.09003	0.77067	0.75855	0.96399
0.96	1.18536	0.89148	0.76002	1.07479
1.00	1.27544	1.02540	0.77127	1.17861
1.04	1.34988	1.17595	0.79484	1.27392
1.08	1.39597	1.34524	0.83288	1.35924
1.12	1.40031	1.53200	0.88660	1.43329
1.16	1.35094	1.73004	0.95598	1.49515
1.20	1.24063	1.92756	1.03960	1.54431
1.24	1.06950	2.10881	1.13477	1.58078
1.28	0.84633	2.25753	1.23786	1.60509
1.32	0.58701	2.36117	1.34492	1.61814
1.36	0.31116	2.41344	1.45212	1.62111
1.40	+ 0.03809	2.41472	1.55622	1.61519
1.44	— 0.21609	2.37089	1.65462	1.60142
1.48	0.43983	2.29053	1.74540	1.58056
1.52	— 0.62588	— 2.18340	+ 1.82711	+ 1.55306

## Bahn 13.

$$\eta_0 = +1.738$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.73800	3.2	+ 0.00618	+ 1.68815
0.1	+ 0.00080	1.73847	3.3	+ 0.00051	1.68418
0.2	0.00170	1.73891	3.4	- 0.00593	1.68033
0.3	0.00270	1.73931	3.5	0.01317	1.67668
0.4	0.00379	1.73967	3.6	0.02122	1.67329
0.5	0.00498	1.73997	3.7	0.03007	1.67025
0.6	0.00626	1.74020	3.8	0.03972	1.66766
0.7	0.00762	1.74035	3.9	0.05015	1.66560
0.8	0.00906	1.74041	4.0	0.06132	1.66418
0.9	0.01057	1.74036	4.1	0.07318	1.66350
1.0	0.01214	1.74019	4.2	0.08565	1.66369
1.1	0.01374	1.73988	4.3	0.09865	1.66485
1.2	0.01538	1.73942	4.4	0.11208	1.66710
1.3	0.01703	1.73880	4.5	0.12581	1.67055
1.4	0.01866	1.73800	4.6	0.13968	1.67534
1.5	0.02025	1.73701	4.7	0.15352	1.68156
1.6	0.02177	1.73582	4.8	0.16712	1.68934
1.7	0.02320	1.73442	4.9	0.18028	1.69878
1.8	0.02450	1.73280	5.0	0.19272	1.70997
1.9	0.02564	1.73094	5.1	0.20418	1.72300
2.0	0.02657	1.72886	5.2	0.21436	1.73792
2.1	0.02726	1.72653	5.3	0.22293	1.75480
2.2	0.02767	1.72397	5.4	0.22956	1.77365
2.3	0.02775	1.72118	5.5	0.23388	1.79447
2.4	0.02746	1.71816	5.6	0.23553	1.81722
2.5	0.02675	1.71492	5.7	0.23413	1.84185
2.6	0.02557	1.71148	5.8	0.22929	1.86824
2.7	0.02388	1.70786	5.9	0.22064	1.89624
2.8	0.02163	1.70409	6.0	0.20781	1.92564
2.9	0.01877	1.70019	6.1	0.19045	1.95619
3.0	0.01527	1.69621	6.2	0.16824	1.98759
3.1	+ 0.01109	+ 1.69217	6.3	- 0.14089	+ 2.01948

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
6.4	— 0.10814	+ 2.05145	7.7	+ 0.79703	+ 2.20847
6.5	0.06980	2.08301	7.8	0.88990	2.17823
6.6	— 0.02573	2.11366	7.9	0.98202	2.13922
6.7	+ 0.02415	2.14282	8.0	1.07212	2.09115
6.8	0.07985	2.16988	8.1	1.15883	2.03386
6.9	0.14127	2.19419	8.2	1.24069	1.96731
7.0	0.20825	2.21509	8.3	1.31609	1.89159
7.1	0.28052	2.23188	8.4	1.38334	1.80692
7.2	0.35771	2.24387	8.5	1.44060	1.71364
7.3	0.43935	2.25036	8.6	1.48591	1.61222
7.4	0.52486	2.25068	8.7	1.51710	1.50322
7.5	0.61353	2.24420	8.8	1.53177	1.38722
7.6	+ 0.70456	+ 2.23030	8.9	+ 1.52715	+ 1.26473

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.5172	+ 1.5032	+ 0.83512	— 1.45590
0.02	1.5312	1.3992	0.79851	1.42256
0.04	1.5305	1.2983	0.76580	1.38541
0.06	1.5169	1.2018	0.73710	1.34462
0.08	1.4920	1.1107	0.71243	1.30037
0.10	1.4580	1.0252	0.69169	1.25289
0.12	1.4168	0.9456	0.67469	1.20242
0.14	1.3704	0.8715	0.66114	1.14921
0.16	1.3207	0.8026	0.65072	1.09352
0.18	1.2691	0.7381	0.64306	1.03560
0.20	1.2172	0.6776	0.63775	0.97570
0.22	1.1660	0.6204	0.63441	0.91405
0.24	1.1165	0.5660	0.63264	0.85087
0.26	1.0694	0.5140	0.63207	0.78636
0.28	1.0254	0.4638	0.63234	0.72073
0.30	0.9849	0.4152	0.63313	0.65413
0.32	+ 0.9482	+ 0.3679	+ 0.63414	— 0.58672



$\psi$	$\xi$	$\eta$	$E$	$F$
0.34	+ 0.9157	+ 0.3216	+ 0.63510	- 0.51863
0.36	0.8874	0.2763	0.63578	0.44997
0.38	0.8635	0.2317	0.63599	0.38084
0.40	0.8441	0.1878	0.63554	0.31133
0.42	0.8291	0.1445	0.63432	0.24153
0.44	0.8186	0.1018	0.63220	0.17148
0.46	0.8127	0.0597	0.62910	0.10126
0.48	0.8114	+ 0.0181	0.62498	- 0.03090
0.50	0.8146	- 0.0230	0.61980	+ 0.03954
0.52	+ 0.8225	- 0.0635	+ 0.61356	+ 0.11004

Bahn 14.  
Periodische Bahn IV.

$$\eta_0 = + 1.740$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74000	1.6	+ 0.02946	+ 1.73741
0.1	+ 0.00107	1.74063	1.7	0.03143	1.73555
0.2	0.00227	1.74123	1.8	0.03322	1.73338
0.3	0.00360	1.74177	1.9	0.03480	1.73091
0.4	0.00506	1.74228	2.0	0.03611	1.72812
0.5	0.00665	1.74271	2.1	0.03711	1.72501
0.6	0.00837	1.74305	2.2	0.03772	1.72158
0.7	0.01021	1.74328	2.3	0.03791	1.71783
0.8	0.01216	1.74339	2.4	0.03760	1.71377
0.9	0.01421	1.74335	2.5	0.03674	1.70943
1.0	0.01634	1.74314	2.6	0.03525	1.70480
1.1	0.01852	1.74275	2.7	0.03309	1.69992
1.2	0.02075	1.74216	2.8	0.03017	1.69481
1.3	0.02299	1.74135	2.9	0.02645	1.68953
1.4	0.02521	1.74030	3.0	0.02185	1.68410
1.5	+ 0.02737	+ 1.73899	3.1	+ 0.01633	+ 1.67860

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
3.2	+ 0.00982	+ 1.67308	6.6	- 0.05880	+ 2.24393
3.3	+ 0.00230	1.66763	6.7	+ 0.00687	2.28391
3.4	- 0.00628	1.66232	6.8	0.08032	2.32103
3.5	0.01595	1.65724	6.9	0.16143	2.35439
3.6	0.02673	1.65249	7.0	0.24996	2.38309
3.7	0.03863	1.64819	7.1	0.34555	2.40618
3.8	0.05164	1.64446	7.2	0.44769	2.42274
3.9	0.06573	1.64143	7.3	0.55577	2.43186
4.0	0.08085	1.63923	7.4	0.66901	2.43266
4.1	0.09695	1.63801	7.5	0.78649	2.42433
4.2	0.11395	1.63793	7.6	0.90717	2.40611
4.3	0.13172	1.63912	7.7	1.02986	2.37737
4.4	0.15015	1.64176	7.8	1.15325	2.33756
4.5	0.16905	1.64602	7.9	1.27591	2.28630
4.6	0.18825	1.65204	8.0	1.39629	2.22335
4.7	0.20749	1.65999	8.1	1.51276	2.14864
4.8	0.22653	1.67004	8.2	1.62355	2.06230
4.9	0.24504	1.68232	8.3	1.72683	1.96466
5.0	0.26269	1.69698	8.4	1.82071	1.85630
5.1	0.27910	1.71414	8.5	1.90325	1.73801
5.2	0.29388	1.73389	8.6	1.97241	1.61087
5.3	0.30657	1.75633	8.7	2.02615	1.47610
5.4	0.31670	1.78148	8.8	2.06229	1.33537
5.5	0.32377	1.80939	8.9	2.07857	1.19052
5.6	0.32730	1.83998	9.0	2.07254	1.04367
5.7	0.32675	1.87322	9.1	2.04138	0.89722
5.8	0.32159	1.90892			
5.9	0.31132	1.94690	8.90	2.07857	1.19051
6.0	0.29543	1.98688	8.95	2.07851	1.11719
6.1	0.27346	2.02850	9.00	2.07254	1.04367
6.2	0.24495	2.07136	9.05	2.06029	0.97023
6.3	0.20954	2.11494	9.10	2.04138	0.89722
6.4	0.16686	2.15869	9.15	2.01532	0.82496
6.5	- 0.11668	+ 2.20193	9.20	+ 1.98160	+ 0.75379

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
9.25	+ 1.93956	+ 0.68404	9.400	+ 1.75415	+ 0.48626
9.30	1.88841	0.61603	9.425	1.71243	0.45519
9.35	1.82708	0.55005	9.450	1.66750	0.42464
9.40	1.75415	0.48626	9.475	1.61821	0.39450
			9.500	1.56407	0.36463
9.350	1.82707	0.55003	9.525	+ 1.50437	+ 0.33470
9.375	+ 1.79217	+ 0.51787			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.000	+ 1.56407	+ 0.36462	+ 0.28698	— 1.07122
0.025	1.46757	0.31759	0.27894	0.98582
0.050	1.37681	0.27817	0.27534	0.89766
0.075	1.29345	0.24387	0.27505	0.80730
0.100	1.21846	0.21280	0.27717	0.71515
0.125	1.15250	0.18355	0.28078	0.62157
0.150	1.09595	0.15517	0.28514	0.52690
0.175	1.04890	0.12705	0.28962	0.43135
0.200	1.01146	0.09886	0.29370	0.33516
0.225	0.98356	0.07047	0.29701	0.23851
0.250	0.96514	0.04187	0.29925	0.14156
0.275	0.95622	+ 0.01314	0.30023	— 0.04443
0.300	+ 0.95670	— 0.01559	+ 0.29984	+ 0.05275

Bahn 15.

$$\eta_0 = + 1.741$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74100	0.6	+ 0.00937	+ 1.74432
0.2	+ 0.00255	1.74235	0.8	0.01359	1.74466
0.4	+ 0.00568	+ 1.74349	1.0	+ 0.01821	+ 1.74434

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
1.2	+ 0.02311	+ 1.74322	8.0	+ 1.54939	+ 2.25435
1.4	0.02805	1.74111	8.2	1.79589	2.07212
1.6	0.03277	1.73787	8.4	2.00913	1.84196
1.8	0.03693	1.73334	8.6	2.17345	1.57077
2.0	0.04010	1.72743	8.8	2.27305	1.26999
2.2	0.04182	1.72008			
2.4	0.04156	1.71132	8.6	2.17345	1.57077
2.6	0.03878	1.70125	8.7	2.23233	1.42317
2.8	0.03292	1.69008	8.8	2.27305	1.26998
3.0	0.02341	1.67813	8.9	2.29367	1.11340
3.2	+ 0.00977	1.66590	9.0	2.29219	0.95599
3.4	— 0.00843	1.65398	9.1	2.26652	0.80066
3.6	0.03149	1.64317	9.2	2.21433	0.65072
3.8	0.05948	1.63443	9.3	2.13277	0.50991
4.0	0.09227	1.62886	9.4	2.01780	0.38245
4.2	0.12938	1.62773			
4.4	0.16990	1.63241	9.30	2.13277	0.50991
4.6	0.21247	1.64436	9.35	2.07980	0.44422
4.8	0.25510	1.66499	9.40	2.01782	0.38244
5.0	0.29519	1.69566	9.45	1.94591	0.32518
5.2	0.32947	1.73751	9.50	1.86274	0.27310
5.4	0.35409	1.79127	9.55	1.76636	0.22682
5.6	0.36474	1.85716	9.60	1.65357	0.18695
5.8	0.35687	1.93452			
6.0	0.32593	2.02172	9.56	1.74524	0.21834
6.2	0.26773	2.11578	9.58	1.70093	0.20212
6.4	0.17877	2.21240	9.60	1.65357	0.18696
6.6	— 0.05667	2.30591	9.62	1.60271	0.17287
6.8	+ 0.09952	2.38946	9.64	1.54779	0.15981
7.0	0.28892	2.45534	9.66	1.48799	0.14770
7.2	0.50857	2.49542	9.68	1.42211	0.13635
7.4	0.75319	2.50172			
7.6	1.01516	2.46708	9.66	1.48799	0.14770
7.8	+ 1.28457	+ 2.38579	9.67	+ 1.45592	+ 0.14194

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
9.68	+ 1.42213	+ 0.13633	9.72	+ 1.26295	+ 0.11325
9.69	1.38638	0.13081	9.73	1.21388	0.10596
9.70	1.34829	0.12525	9.74	+ 1.15826	+ 0.09648
9.71	+ 1.30738	+ 0.11950			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.26295	+ 0.11325	+ 0.14337	— 0.72689
0.02	1.20634	0.10468	0.15052	0.65109
0.04	1.15500	0.09585	0.15863	0.57460
0.06	1.11064	0.08633	0.16733	0.49756
0.08	1.07266	0.07586	0.17629	0.42008
0.10	1.04100	0.06427	0.18523	0.34223
0.12	1.01567	0.05176	0.19393	0.26412
0.14	0.99657	0.03753	0.20222	0.18581
0.16	0.98368	0.02242	0.20995	0.10737
0.18	0.97695	+ 0.00621	0.21703	— 0.02885
0.20	0.97636	— 0.01101	0.22342	+ 0.04968
0.22	+ 0.98188	— 0.02918	+ 0.22910	+ 0.12815

## Bahn 16.

$$\eta_0 = + 1.742$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74200	1.4	+ 0.03120	+ 1.74198
0.2	+ 0.00284	1.74351	1.6	0.03639	1.73833
0.4	0.00633	1.74479	1.8	0.04094	1.73326
0.6	0.01046	1.74568	2.0	0.04438	1.72667
0.8	0.01515	1.74603	2.2	0.04620	1.71849
1.0	0.02030	1.74565	2.4	0.04581	1.70875
1.2	+ 0.02572	+ 1.74437	2.6	+ 0.04262	+ 1.69757

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.8	+ 0.03600	+ 1.68518	6.2	- 0.29529	+ 2.16064
3.0	0.02533	1.67194	6.4	0.19575	2.26731
3.2	+ 0.01006	1.65839	6.6	- 0.05970	2.36997
3.4	- 0.01029	1.64521	6.8	+ 0.11366	2.46092
3.6	0.03603	1.63329	7.0	0.32317	2.53157
3.8	0.06728	1.62370	7.2	0.56534	2.57297
4.0	0.10385	1.61768	7.4	0.83419	2.57642
4.2	0.14519	1.61664	7.6	1.12118	2.53429
4.4	0.19032	1.62208	7.8	1.41540	2.44063
4.6	0.23768	1.63561	8.0	1.70389	2.29201
4.8	0.28504	1.65880	8.2	1.97196	2.08824
5.0	0.32949	1.69315	8.4	2.20405	1.83296
5.2	0.36735	1.73990	8.6	2.38441	1.53422
5.4	0.39430	1.79990	8.8	2.49799	1.20495
5.6	0.40556	1.87334	9.0	2.53128	0.86318
5.8	0.39606	1.95949	9.2	+ 2.47285	+ 0.53245
6.0	- 0.36082	+ 2.05639			

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 2.5314	+ 0.8632	+ 0.35190	- 1.64886
0.02	2.5072	0.6574	0.27667	1.61204
0.04	2.4528	0.4785	0.20960	1.57018
0.06	2.3761	0.3290	0.15113	1.52361
0.08	2.2834	0.2091	0.10140	1.47271
0.10	2.1813	0.1171	0.06030	1.41788
0.12	2.0748	0.0500	0.02752	1.35954
0.14	1.9677	+ 0.0043	+ 0.00255	1.29810
0.16	1.8627	- 0.0239	- 0.01521	1.23396
0.18	1.7519	0.0384	0.02646	1.16750
0.20	1.6664	0.0426	0.03190	1.09906
0.22	1.5769	0.0394	0.03229	1.02897
0.24	+ 1.4939	- 0.0314	- 0.02832	- 0.95748

$\psi$	$\xi$	$\eta$	$E$	$F$
0.26	+ 1.4174	- 0.0208	- 0.02067	- 0.88483
0.28	1.3474	- 0.0090	- 0.00998	0.81122
0.30	1.2839	+ 0.0026	+ 0.00318	0.73682
0.32	1.2269	0.0130	0.01826	0.66177
0.34	1.1760	0.0216	0.03480	0.58617
0.36	1.1314	0.0279	0.05237	0.51012
0.38	1.0928	0.0316	0.07062	0.43371
0.40	1.0602	0.0325	0.08921	0.35700
0.42	1.0334	0.0306	0.10788	0.28005
0.44	1.0125	0.0258	0.12642	0.20292
0.46	0.9974	0.0182	0.14463	0.12565
0.48	0.9880	+ 0.0098	0.16239	- 0.04830
0.50	0.9843	- 0.0052	0.17960	+ 0.02906
0.52	+ 0.9864	- 0.0208	+ 0.19621	+ 0.10632

## Bahn 17.

$$\eta_0 = + 1.743$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74300	1.4	+ 0.03429	+ 1.74298
0.1	+ 0.00148	1.74386	1.5	0.03721	1.74115
0.2	0.00313	1.74467	1.6	0.04000	1.73896
0.3	0.00496	1.74542	1.7	0.04261	1.73638
0.4	0.00697	1.74608	1.8	0.04499	1.73339
0.5	0.00916	1.74663	1.9	0.04706	1.72998
0.6	0.01151	1.74706	2.0	0.04876	1.72614
0.7	0.01402	1.74734	2.1	0.05002	1.72187
0.8	0.01667	1.74744	2.2	0.05075	1.71716
0.9	0.01944	1.74734	2.3	0.05088	1.71202
1.0	0.02233	1.74702	2.4	0.05033	1.70647
1.1	0.02528	1.74645	2.5	0.04900	1.70052
1.2	0.02829	1.74560	2.6	0.04682	1.69420
1.3	+ 0.03131	+ 1.74445	2.7	+ 0.04370	+ 1.68754

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.8	+ 0.03955	+ 1.68059	6.3	— 0.27952	+ 2.26139
2.9	0.03429	1.67341	6.4	0.22023	2.31997
3.0	0.02784	1.66605	6.5	0.15094	2.37741
3.1	0.02012	1.65861	6.6	— 0.07147	2.43267
3.2	0.01107	1.65116	6.7	+ 0.01821	2.48465
3.3	+ 0.00062	1.64380	6.8	0.11801	2.53217
3.4	— 0.01127	1.63666	6.9	0.22767	2.57402
3.5	0.02466	1.62986	7.0	0.34680	2.60898
3.6	0.03955	1.62353	7.1	0.47480	2.63580
3.7	0.05597	1.61783	7.2	0.61096	2.65329
3.8	0.07390	1.61292	7.3	0.75434	2.66027
3.9	0.09331	1.60899	7.4	0.90388	2.65567
4.0	0.11414	1.60621	7.5	1.05832	2.63848
4.1	0.13632	1.60479	7.6	1.21624	2.60785
4.2	0.15972	1.60493	7.7	1.37610	2.56306
4.3	0.18419	1.60684	7.8	1.53621	2.50355
4.4	0.20955	1.61076	7.9	1.69476	2.42900
4.5	0.23555	1.61688	8.0	1.84983	2.33926
4.6	0.26193	1.62544	8.1	1.99946	2.23447
4.7	0.28835	1.63666	8.2	2.14162	2.11500
4.8	0.31443	1.65074	8.3	2.27428	1.98150
4.9	0.33974	1.66790	8.4	2.39540	1.83492
5.0	0.36379	1.68831	8.5	2.50301	1.67651
5.1	0.38605	1.71215	8.6	2.59525	1.50783
5.2	0.40595	1.73955	8.7	2.67034	1.33074
5.3	0.42285	1.77063	8.8	2.72671	1.14743
5.4	0.43612	1.80544	8.9	2.76298	0.96038
5.5	0.44506	1.84399	9.0	2.77802	0.77240
5.6	0.44898	1.88621	9.1	2.77098	0.58657
5.7	0.44719	1.93198	9.2	2.74131	0.40624
5.8	0.43898	1.98106	9.3	2.68882	0.23507
5.9	0.42369	2.03314	9.4	2.61364	+ 0.07696
6.0	0.40067	2.08780	9.5	2.51620	— 0.06386
6.1	0.36931	2.14451	9.6	2.39722	0.18282
6.2	— 0.32909	+ 2.20262	9.7	+ 2.25749	— 0.27484



$\psi$	$\xi$	$\eta$	$E$	$F$
0.000	+ 2.51618	— 0.06386	+ 0.02765	+ 1.57426
0.025	2.36444	0.20837	0.09685	1.51082
0.050	2.20705	0.29829	0.15004	1.44166
0.075	2.05367	0.34305	0.18797	1.36771
0.100	1.91026	0.35292	0.21183	1.28990
0.125	1.77921	0.33751	0.22303	1.20906
0.150	1.66142	0.30519	0.22310	1.12589
0.175	1.55639	0.26275	0.21361	1.04100
0.200	1.46300	0.21556	0.19603	0.95483
0.225	1.38006	0.16764	0.17177	0.86772
0.250	1.30659	0.12201	0.14210	0.77996
0.275	1.24157	0.08078	0.10819	0.69164
0.300	1.18432	0.04545	0.07106	0.60290
0.325	1.13433	— 0.01698	+ 0.03164	0.51379
0.350	1.09135	+ 0.00406	— 0.00928	0.42436
0.375	1.05515	0.01738	0.05101	0.33464
0.400	1.02563	0.02294	0.09296	0.24468
0.425	1.00279	0.02083	0.13466	0.15453
0.450	0.98664	+ 0.01124	0.17571	+ 0.06427
0.475	0.97712	— 0.00557	0.21585	— 0.02600
0.500	0.97425	0.02935	0.25489	0.11614
0.525	+ 0.97790	— 0.05986	— 0.29274	— 0.20598

## Bahn 18.

$$\eta_0 = + 1.744$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	+ 0.00000	+ 1.74400	1.0	+ 0.02442	+ 1.74843
0.2	0.00341	1.74583	1.2	0.03095	1.74689
0.4	0.00761	1.74737	1.4	0.03753	1.74403
0.6	0.01258	1.74846	1.6	0.04377	1.73965
0.8	+ 0.01822	+ 1.74888	1.8	+ 0.04924	+ 1.73357

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.0	+ 0.05338	+ 1.72565	6.0	— 0.44416	+ 2.11971
2.2	0.05557	1.71583	6.2	0.36659	2.24565
2.4	0.05513	1.70414	6.4	0.24837	2.37427
2.6	0.05133	1.69072	6.6	— 0.08671	2.49762
2.8	0.04340	1.67582	6.8	+ 0.11918	2.60623
3.0	0.03063	1.65989	7.0	0.36765	2.68970
3.2	+ 0.01231	1.64356	7.2	0.65434	2.73730
3.4	— 0.01211	1.62766	7.4	0.97199	2.73880
3.6	0.04303	1.61322	7.6	1.31044	2.68534
3.8	0.08066	1.60151	7.8	1.65693	2.57020
4.0	0.12479	1.59402	8.0	1.99654	2.38976
4.2	0.17484	1.59243	8.2	2.31290	2.14415
4.4	0.22967	1.59858	8.4	2.58915	1.83788
4.6	0.28743	1.61438	8.6	2.80909	1.48027
4.8	0.34545	1.64177	8.8	2.95852	1.08553
5.0	0.40014	1.68258	9.0	3.02669	0.67247
5.2	0.44702	1.73839	9.2	3.00770	+ 0.26388
5.4	0.48081	1.81033	9.4	2.90184	— 0.11455
5.6	0.49563	1.89870	9.6	2.71642	0.43561
5.8	— 0.48538	+ 2.00265	9.8	+ 2.46620	— 0.67193

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 2.46620	— 0.67193	+ 0.28752	+ 1.59762
0.02	2.31111	0.75502	0.34353	1.54671
0.04	2.16385	0.79822	0.38749	1.49281
0.06	2.02900	0.80880	0.41986	1.43654
0.08	1.90817	0.79376	0.44130	1.37847
0.10	1.80204	0.75933	0.45260	1.31913
0.12	1.70961	0.71087	0.45459	1.25898
0.14	1.62970	0.65280	0.44814	1.19841
0.16	1.56057	0.58866	0.43411	1.13773
0.18	+ 1.50048	— 0.52127	+ 0.41331	+ 1.07715

$\psi$	$\xi$	$\eta$	$E$	$F$
0.20	+ 1.44780	— 0.45289	+ 0.38652	+ 1.01686
0.22	1.40100	0.38521	0.35448	0.95693
0.24	1.35878	0.31968	0.31788	0.89741
0.26	1.32000	0.25737	0.27734	0.83831
0.28	1.28374	0.19920	0.23348	0.77958
0.30	1.24937	0.14588	0.18683	0.72118
0.32	1.21631	0.09800	0.13794	0.66304
0.34	1.18419	0.05602	0.08727	0.60509
0.36	1.15282	— 0.02028	+ 0.03527	0.54725
0.38	1.12203	+ 0.00898	— 0.01763	0.48947
0.40	1.09190	0.03090	0.07107	0.43172
0.42	1.06242	0.04760	0.12470	0.37395
0.44	1.03374	0.05698	0.17820	0.31616
0.46	1.00605	0.05990	0.23132	0.25837
0.48	0.97938	0.05655	0.28383	0.20061
0.50	0.95385	0.04724	0.33568	0.14293
0.52	0.92972	0.03221	0.38623	0.08539
0.54	0.90688	+ 0.01186	0.43586	+ 0.02809
0.56	+ 0.88536	— 0.01345	— 0.48431	— 0.02889

## Bahn 19.

$$\eta_0 = + 1.745$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.000	0.00000	+ 1.74500	1.000	+ 0.02639	+ 1.74974
0.125	+ 0.00221	1.74626	1.125	0.03077	1.74884
0.250	0.00476	1.74743	1.250	0.03522	1.74743
0.375	0.00763	1.74845	1.375	0.03965	1.74543
0.500	0.01083	1.74929	1.500	0.04396	1.74281
0.625	0.01434	1.74989	1.625	0.04805	1.73950
0.750	0.01812	1.75020	1.750	0.05178	1.73546
0.875	+ 0.02216	+ 1.75017	1.875	+ 0.05501	+ 1.73066

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
2.000	+ 0.05759	+ 1.72507	6.250	— 0.37123	+ 2.32288
2.125	0.05934	1.71867	6.375	0.28970	2.40980
2.250	0.06010	1.71148	6.500	0.18999	2.49485
2.375	0.05966	1.70351	6.625	— 0.07174	2.57560
2.500	0.05785	1.69478	6.750	+ 0.06504	2.64944
2.625	0.05445	1.68538	6.875	0.21995	2.71361
2.750	0.04928	1.67537	7.000	0.39212	2.76526
2.875	0.04213	1.66487	7.125	0.58023	2.80158
3.000	0.03281	1.65402	7.250	0.78249	2.81984
3.125	0.02116	1.64299	7.375	0.99664	2.81748
3.250	+ 0.00701	1.63200	7.500	1.21993	2.79222
3.375	— 0.00978	1.62128	7.625	1.44923	2.74212
3.500	0.02931	1.61110	7.750	1.68099	2.66569
3.625	0.05166	1.60180	7.875	1.91134	2.56194
3.750	0.07684	1.59371	8.000	2.13620	2.43048
3.875	0.10483	1.58724	8.125	2.35130	2.27159
4.000	0.13544	1.58280	8.250	2.55233	2.08623
4.125	0.16878	1.58086	8.375	2.73505	1.87611
4.250	0.20429	1.58188	8.500	2.89541	1.64367
4.375	0.24170	1.58636	8.625	3.02969	1.39214
4.500	0.28050	1.59482	8.750	3.13465	1.12543
4.625	0.32006	1.60775	8.875	3.20768	0.84812
4.750	0.35960	1.62568	9.000	3.24691	0.56534
4.875	0.39818	1.64909	9.125	3.25136	0.28265
5.000	0.43469	1.67845	9.250	3.22103	+ 0.00590
5.125	0.46789	1.71416	9.375	3.15702	— 0.25894
5.250	0.49641	1.75658	9.500	3.06144	0.50596
5.375	0.51877	1.80594	9.625	2.93756	0.72957
5.500	0.53339	1.86231	9.750	2.78965	0.92463
5.625	0.53869	1.92556	9.875	2.62292	1.08658
5.750	0.53305	1.99537	10.000	2.44342	1.21167
5.875	0.51490	2.07109	10.125	2.25784	1.29696
6.000	0.48276	2.15179	10.250	2.07335	1.34039
6.125	— 0.43526	+ 2.23624	10.375	+ 1.89742	— 1.34068

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
10.500	+ 1.73759	— 1.29712	10.750	+ 1.49531	— 1.07540
10.625	+ 1.60125	— 1.20913	10.875	+ 1.42539	— 0.89190

## Bahn 20.

$$\eta_0 = + 1.746$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.000	0.00000	+ 1.74600	3.125	+ 0.02289	+ 1.63604
0.125	+ 0.00238	1.74736	3.250	+ 0.00764	1.62416
0.250	0.00512	1.74861	3.375	— 0.01046	1.61256
0.375	0.00822	1.74971	3.500	0.03153	1.60155
0.500	0.01166	1.75062	3.625	0.05565	1.59147
0.625	0.01544	1.75127	3.750	0.08285	1.58269
0.750	0.01952	1.75161	3.875	0.11310	1.57564
0.875	0.02386	1.75158	4.000	0.14630	1.57078
1.000	0.02843	1.75112	4.125	0.18239	1.56857
1.125	0.03315	1.75015	4.250	0.22076	1.56958
1.250	0.03794	1.74863	4.375	0.26133	1.57430
1.375	0.04272	1.74649	4.500	0.30346	1.58327
1.500	0.04737	1.74366	4.625	0.34645	1.59707
1.625	0.05178	1.74010	4.750	0.38947	1.61623
1.750	0.05581	1.73575	4.875	0.43148	1.64130
1.875	0.05929	1.73058	5.000	0.47129	1.67278
2.000	0.06208	1.72456	5.125	0.50754	1.71115
2.125	0.06397	1.71768	5.250	0.53873	1.75679
2.250	0.06479	1.70992	5.375	0.56324	1.80997
2.375	0.06434	1.70133	5.500	0.57940	1.87077
2.500	0.06239	1.69193	5.625	0.58545	1.93908
2.625	0.05874	1.68179	5.750	0.57968	2.01451
2.750	0.05317	1.67099	5.875	0.56041	2.09637
2.875	0.04548	1.65966	6.000	0.52605	2.18364
3.000	+ 0.03545	+ 1.64795	6.125	— 0.47515	+ 2.27492

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
6.250	— 0.40644	+ 2.36851	8.875	+ 3.42351	+ 0.76315
6.375	0.31893	2.46234	9.000	3.46854	0.45477
6.500	0.21191	2.55404	9.125	3.47746	+ 0.14462
6.625	— 0.08502	2.64098	9.250	3.45026	— 0.16154
6.750	+ 0.06170	2.72030	9.375	3.38796	0.45841
6.875	0.22777	2.78902	9.500	3.29256	0.74023
7.000	0.41224	2.84401	9.625	3.16704	1.00203
7.125	0.61366	2.88253	8.750	3.01523	1.23932
7.250	0.83010	2.90136	9.875	2.84178	1.44828
7.375	1.05909	2.89789	10.000	2.65191	1.62596
7.500	1.29771	2.86951	10.125	2.45132	1.77032
7.625	1.54258	2.81468	10.250	2.24597	1.88031
7.750	1.78993	2.73134	10.375	2.04189	1.95587
7.875	2.03567	2.61862	10.500	1.84506	1.99809
8.000	2.27545	2.47612	10.625	1.66117	2.00839
8.125	2.50481	2.30414	10.750	1.49550	1.98953
8.250	2.71821	2.10371	10.875	1.35286	1.94490
8.375	2.91426	1.87660	11.000	1.23737	1.87821
8.500	3.08575	1.62536	11.125	1.15242	1.79365
8.625	3.22987	1.35329	11.250	1.11069	1.69565
8.750	+ 3.34333	+ 1.06435	11.375	+ 1.08612	— 1.58857

$\psi$	$\xi$	$\eta$	$E$	$F$
0.00	+ 1.23737	— 1.87822	+ 1.03092	+ 1.52537
0.01	1.19660	1.84348	1.03926	1.50393
0.02	1.16303	1.80725	1.04484	1.48304
0.03	1.13614	1.77005	1.04782	1.46276
0.04	1.11536	1.73232	1.04834	1.44318
0.05	1.10023	1.69441	1.04654	1.42437
0.06	1.09025	1.65663	1.04255	1.40639
0.07	1.08497	1.61915	1.03650	1.38928
0.08	+ 1.08400	— 1.58217	+ 1.02853	+ 1.37312

$\psi$	$\xi$	$\eta$	$E$	$F$
0.09	+ 1.08697	- 1.54579	+ 1.01875	+ 1.35793
0.10	1.09352	1.51011	1.00728	1.34377
0.11	1.10336	1.47519	0.99423	1.33068
0.12	1.11622	1.44104	0.97970	1.31869
0.13	1.13183	1.40769	0.96380	1.30782
0.14	1.15000	1.37516	0.94662	1.29813
0.15	1.17052	1.34340	0.92826	1.28963
0.16	1.19325	1.31239	0.90881	1.28234
0.17	1.21800	1.28212	0.88835	1.27630
0.18	1.24465	1.25255	0.86699	1.27152
0.19	1.27308	1.22364	0.84480	1.26804
0.20	1.30319	1.19537	0.82187	1.26586
0.21	1.33492	1.16771	0.79831	1.26503
0.22	1.36819	1.14061	0.77418	1.26555
0.23	1.40296	1.11404	0.74957	1.26745
0.24	1.43920	1.08801	0.72459	1.27076
0.25	1.47691	1.06248	0.69931	1.27550
0.26	1.51610	1.03748	0.67385	1.28171
0.27	+ 1.55679	- 1.01300	+ 0.64830	+ 1.28942

## Bahn 21.

$$\eta_0 = + 1.7474$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74740	0.8	+ 0.02335	+ 1.75360
0.1	+ 0.00207	1.74860	0.9	0.02724	1.75346
0.2	0.00439	1.74974	1.0	0.03127	1.75301
0.3	0.00696	1.75078	1.1	0.03540	1.75220
0.4	0.00977	1.75170	1.2	0.03961	1.75102
0.5	0.01283	1.75248	1.3	0.04382	1.74940
0.6	0.01613	1.75307	1.4	0.04800	1.74734
0.7	+ 0.01964	+ 1.75346	1.5	+ 0.05208	+ 1.74479

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
1.6	+ 0.05597	+ 1.74172	5.0	— 0.52251	+ 1.66517
1.7	0.05962	1.73810	5.1	0.55525	1.69816
1.8	0.06294	1.73392	5.2	0.58464	1.73624
1.9	0.06583	1.72915	5.3	0.60978	1.77962
2.0	0.06820	1.72378	5.4	0.62971	1.82840
2.1	0.06994	1.71780	5.5	0.64349	1.88261
2.2	0.07096	1.71121	5.6	0.65013	1.94219
2.3	0.07113	1.70401	5.7	0.64867	2.00692
2.4	0.07035	1.69623	5.8	0.63816	2.07648
2.5	0.06848	1.68790	5.9	0.61767	2.15035
2.6	0.06542	1.67903	6.0	0.58634	2.22789
2.7	0.06105	1.66969	6.1	0.54339	2.30827
2.8	0.05523	1.65994	6.2	0.48810	2.39053
2.9	0.04785	1.64985	6.3	0.41986	2.47351
3.0	0.03881	1.63951	6.4	0.33822	2.55595
3.1	0.02798	1.62903	6.5	0.24285	2.63643
3.2	0.01528	1.61853	6.6	0.13358	2.71344
3.3	+ 0.00061	1.60814	6.7	— 0.01042	2.78536
3.4	— 0.01612	1.59803	6.8	+ 0.12640	2.85054
3.5	0.03495	1.58838	6.9	0.27646	2.90724
3.6	0.05594	1.57936	7.0	0.43913	2.95377
3.7	0.07912	1.57121	7.1	0.61355	2.98842
3.8	0.10448	1.56415	7.2	0.79864	3.00954
3.9	0.13200	1.55842	7.3	0.99308	3.01560
4.0	0.16160	1.55428	7.4	1.19537	3.00514
4.1	0.19320	1.55202	7.5	1.40378	2.97688
4.2	0.22664	1.55191	7.6	1.61638	2.92973
4.3	0.26173	1.55426	7.7	1.83111	2.86278
4.4	0.29820	1.55936	7.8	2.04574	2.77540
4.5	0.33572	1.56752	7.9	2.25792	2.66720
4.6	0.37391	1.57906	8.0	2.46524	2.53806
4.7	0.41227	1.59429	8.1	2.66521	2.38821
4.8	0.45027	1.61352	8.2	2.85538	2.21816
4.9	— 0.48725	+ 1.63704	8.3	+ 3.03332	+ 2.02875



$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
8.4	+ 3.19666	+ 1.82115	9.0	+ 3.76136	+ 0.29551
8.5	3.34320	1.59682	9.1	3.77357	+ 0.01660
8.6	3.47091	1.35755	9.2	3.76074	— 0.26212
8.7	3.57797	1.10539	9.3	3.72308	0.53782
8.8	3.66283	0.84263	9.4	3.66118	0.80771
8.9	+ 3.72426	+ 0.57178	9.5	+ 3.57599	— 1.06915

Bahn 22.  
Periodische Bahn V.

$$\eta_0 = + 1.747552$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74755	2.0	+ 0.06989	+ 1.72370
0.1	+ 0.00209	1.74876	2.1	0.07065	1.71766
0.2	0.00443	1.74991	2.2	0.07168	1.71100
0.3	0.00702	1.75096	2.3	0.07185	1.70374
0.4	0.00987	1.75190	2.4	0.07106	1.69588
0.5	0.01296	1.75268	2.5	0.06918	1.68746
0.6	0.01629	1.75328	2.6	0.06609	1.67851
0.7	0.01984	1.75367	2.7	0.06167	1.66908
0.8	0.02358	1.75382	2.8	0.05579	1.65923
0.9	0.02751	1.75368	2.9	0.04835	1.64904
1.0	0.03158	1.75322	3.0	0.03922	1.63860
1.1	0.03576	1.75241	3.1	0.02828	1.62801
1.2	0.04001	1.75121	3.2	0.01546	1.61740
1.3	0.04427	1.74958	3.3	+ 0.00064	1.60691
1.4	0.04848	1.74750	3.4	— 0.01625	1.59670
1.5	0.05260	1.74492	3.5	0.03527	1.58694
1.6	0.05656	1.74182	3.6	0.05647	1.57784
1.7	0.06022	1.73817	3.7	0.07988	1.56960
1.8	0.06357	1.73394	3.8	0.10550	1.56246
1.9	+ 0.06649	+ 1.72913	3.9	— 0.13329	+ 1.55666

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
4.0	— 0.16320	+ 1.55247	6.7	— 0.01215	+ 2.79560
4.1	0.19513	1.55017	6.8	+ 0.12588	2.86140
4.2	0.22892	1.55004	6.9	0.27728	2.91865
4.3	0.26438	1.55239	7.0	0.44139	2.96560
4.4	0.30124	1.55752	7.1	0.61735	3.00055
4.5	0.33918	1.56574	7.2	0.80406	3.02184
4.6	0.37779	1.57737	7.3	1.00020	3.02789
4.7	0.41658	1.59272	7.4	1.20425	3.01726
4.8	0.45501	1.61210	7.5	1.41445	2.98867
4.9	0.49242	1.63583	7.6	1.62888	2.94098
5.0	0.52808	1.66420	7.7	1.84544	2.87331
5.1	0.56121	1.69749	7.8	2.06189	2.78500
5.2	0.59096	1.73593	7.9	2.27586	2.67567
5.3	0.61640	1.77971	8.0	2.48491	2.54521
5.4	0.63659	1.82896	8.1	2.68657	2.39383
5.5	0.65056	1.88370	8.2	2.87832	2.22205
5.6	0.65733	1.94387	8.3	3.05774	2.03071
5.7	0.65591	2.00925	8.4	3.22245	1.82098
5.8	0.64535	2.07951	8.5	3.37022	1.59436
5.9	0.62472	2.15414	8.6	3.49901	1.35260
6.0	0.59315	2.23247	8.7	3.60699	1.09778
6.1	0.54983	2.31368	8.8	3.69260	0.83219
6.2	0.49406	2.39678	8.9	3.75459	0.55835
6.3	0.42524	2.48062	9.0	3.79204	+ 0.27892
6.4	0.34288	2.56389	9.1	3.80439	— 0.00332
6.5	0.24665	2.64519	9.2	+ 3.79146	— 0.28552
6.6	— 0.13640	+ 2.72296			

## Bahn 23.

$$\eta_0 = + 1.74765$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74765	0.2	+ 0.00446	+ 1.75003
0.1	+ 0.00210	+ 1.74887	0.3	+ 0.00707	+ 1.75109

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.4	+ 0.00993	+ 1.75203	3.8	- 0.10616	+ 1.56136
0.5	0.01304	1.75282	3.9	0.13413	1.55552
0.6	0.01639	1.75342	4.0	0.16424	1.55130
0.7	0.01996	1.75382	4.1	0.19638	1.54897
0.8	0.02374	1.75396	4.2	0.23040	1.54883
0.9	0.02769	1.75382	4.3	0.26610	1.55119
1.0	0.03178	1.75336	4.4	0.30322	1.55633
1.1	0.03599	1.75254	4.5	0.34142	1.56459
1.2	0.04026	1.75133	4.6	0.38030	1.57628
1.3	0.04455	1.74970	4.7	0.41938	1.59170
1.4	0.04880	1.74760	4.8	0.45808	1.61119
1.5	0.05294	1.74500	4.9	0.49576	1.63505
1.6	0.05690	1.74188	5.0	0.53170	1.66358
1.7	0.06062	1.73821	5.1	0.56508	1.69706
1.8	0.06398	1.73396	5.2	0.59505	1.73572
1.9	0.06692	1.72911	5.3	0.62069	1.77977
2.0	0.06933	1.72365	5.4	0.64105	1.82932
2.1	0.07111	1.71757	5.5	0.65515	1.88441
2.2	0.07214	1.71087	5.6	0.66199	1.94496
2.3	0.07232	1.70356	5.7	0.66060	2.01076
2.4	0.07152	1.69566	5.8	0.65001	2.08148
2.5	0.06963	1.68718	5.9	0.62929	2.15660
2.6	0.06652	1.67818	6.0	0.59756	2.23545
2.7	0.06207	1.66869	6.1	0.55401	2.31719
2.8	0.05616	1.65878	6.2	0.49793	2.40084
2.9	0.04867	1.64852	6.3	0.42872	2.48522
3.0	0.03948	1.63801	6.4	0.34589	2.56904
3.1	0.02848	1.62736	6.5	0.24912	2.65086
3.2	0.01557	1.61668	6.6	0.13824	2.72914
3.3	+ 0.00066	1.60612	6.7	- 0.01328	2.80224
3.4	- 0.01634	1.59584	6.8	+ 0.12555	2.86845
3.5	0.03548	1.58602	6.9	0.27781	2.92604
3.6	0.05681	1.57685	7.0	0.44286	2.97327
3.7	- 0.08037	+ 1.56855	7.1	+ 0.61981	+ 3.00842

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
7.2	+ 0.80758	+ 3.02980	8.4	+ 3.23917	+ 1.82088
7.3	1.00482	3.03586	8.5	3.38774	1.59276
7.4	1.21000	3.02513	8.6	3.51723	1.34939
7.5	1.42137	2.99630	8.7	3.62581	1.09284
7.6	1.63699	2.94827	8.8	3.71190	0.82542
7.7	1.85473	2.88014	8.9	3.77425	0.54964
7.8	2.07236	2.79123	9.0	3.81193	+ 0.26816
7.9	2.28749	2.68116	9.1	3.82436	- 0.01623
8.0	2.49767	2.54984	9.2	3.81136	0.30069
8.1	2.70041	2.39747	9.3	3.77311	0.58238
8.2	2.89320	2.22456	9.4	+ 3.71014	- 0.85853
8.3	+ 3.07357	+ 2.03198			

## Bahn 24.

$$\eta_0 = + 1.748$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.74800	3.0	+ 0.04028	+ 1.63593
0.2	+ 0.00456	1.75043	3.2	+ 0.01583	1.61412
0.4	0.01015	1.75247	3.4	- 0.01680	1.59281
0.6	0.01676	1.75390	3.6	0.05820	1.57338
0.8	0.02426	1.75444	3.8	0.10867	1.55753
1.0	0.03248	1.75382	4.0	0.16811	1.54723
1.2	0.04115	1.75175	4.2	0.23583	1.54468
1.4	0.04986	1.74793	4.4	0.31040	1.55231
1.6	0.05814	1.74209	4.6	0.38937	1.57264
1.8	0.06537	1.73399	4.8	0.46908	1.60825
2.0	0.07083	1.72345	5.0	0.54453	1.66173
2.2	0.07369	1.71040	5.2	0.60946	1.73542
2.4	0.07305	1.69485	5.4	0.65664	1.83108
2.6	0.06793	1.67698	5.6	0.67815	1.94935
2.8	+ 0.05734	+ 1.65715	5.8	- 0.66598	+ 2.08901

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
6.0	-0.61243	+ 2.24655	10.2	+ 2.50474	- 2.73620
6.2	0.51068	2.41575	10.4	2.05188	2.99804
6.4	0.35540	2.58774	10.6	1.58215	3.17332
6.6	-0.14337	2.75132	10.8	1.11373	3.26451
6.8	+ 0.12590	2.89349	11.0	0.66298	3.27782
7.0	0.44969	3.00026	11.2	+ 0.24376	3.22238
7.2	0.82172	3.05751	11.4	-0.13297	3.10940
7.4	1.23204	3.05210	11.6	0.45932	2.95125
7.6	1.66722	2.97287	11.8	0.73035	2.76070
7.8	2.11076	2.81168	12.0	0.94377	2.55006
8.0	2.54386	2.56432	12.2	1.09944	2.33054
8.2	2.94644	2.23128	12.4	1.19876	2.11172
8.4	3.29844	1.81810	12.6	1.24397	1.90108
8.6	3.58121	1.33552	12.8	1.23733	1.70350
8.8	3.77902	0.79897	13.0	1.18043	1.52065
9.0	3.88037	+ 0.22775	13.2	1.07371	1.35019
9.2	3.87906	-0.35634	13.4	0.917	1.184
9.4	3.77468	0.93063	13.6	0.709	1.006
9.6	3.57260	1.47328	13.8	0.454	0.789
9.8	3.28533	1.96487	14.0	-0.16	-0.49
10.0	+ 2.92154	- 2.38962			

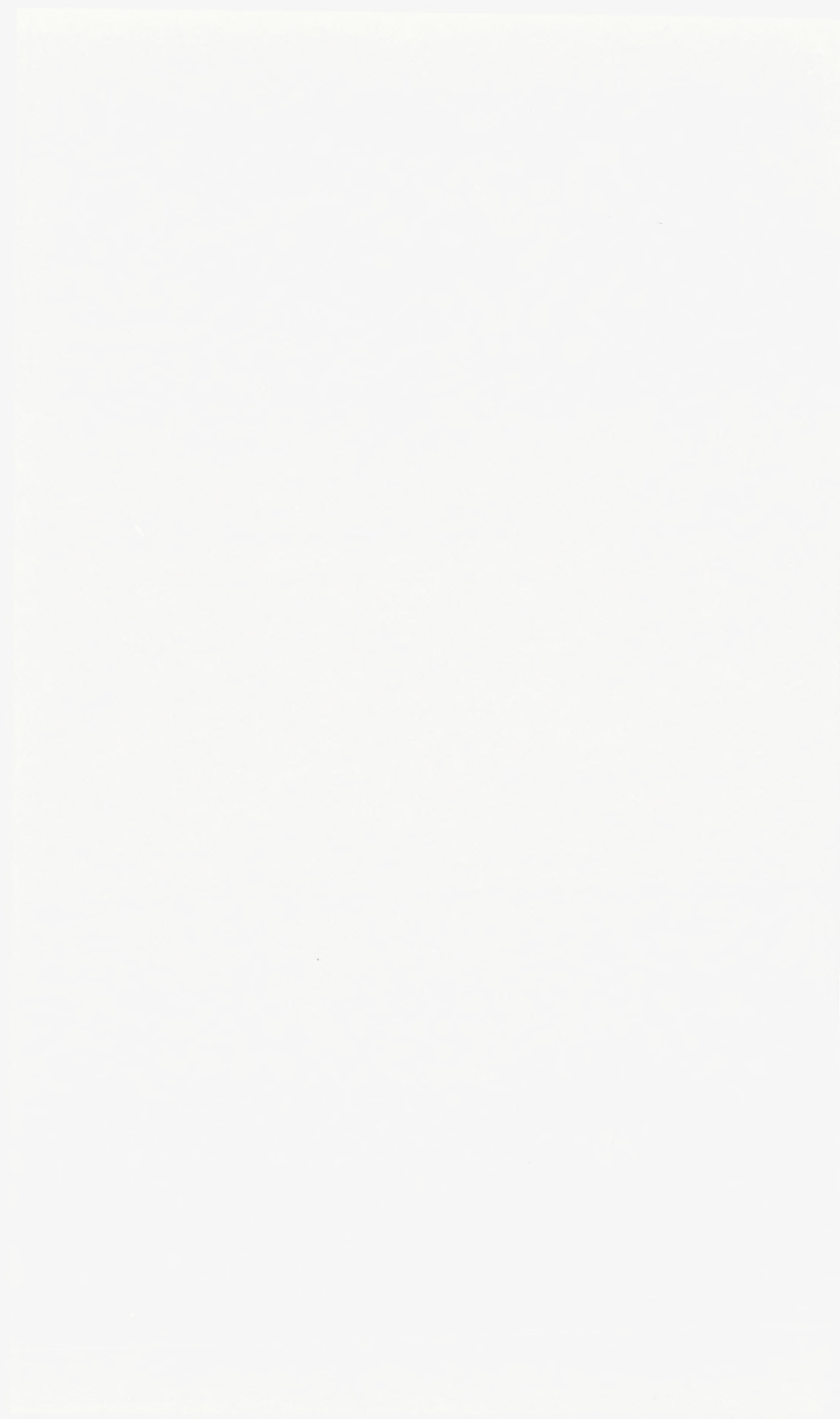
## Bahn 25.

$$\eta_0 = + 1.750$$

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
0.0	0.00000	+ 1.75000	0.6	+ 0.01885	+ 1.75663
0.1	+ 0.00242	1.75141	0.7	0.02296	1.75708
0.2	0.00513	1.75273	0.8	0.02729	1.75724
0.3	0.00813	1.75395	0.9	0.03183	1.75708
0.4	0.01142	1.75503	1.0	0.03654	1.75655
0.5	+ 0.01500	+ 1.75594	1.1	+ 0.04138	+ 1.75561

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
1.2	+ 0.04629	+ 1.75422	4.6	- 0.44217	+ 1.55056
1.3	0.05122	1.75234	4.7	0.48798	1.56792
1.4	0.05609	1.74992	4.8	0.53340	1.58993
1.5	0.06085	1.74694	4.9	0.57768	1.61695
1.6	0.06540	1.74335	5.0	0.61994	1.64936
1.7	0.06966	1.73912	5.1	0.65924	1.68750
1.8	0.07353	1.73423	5.2	0.69457	1.73169
1.9	0.07690	1.72865	5.3	0.72486	1.78218
2.0	0.07966	1.72237	5.4	0.74900	1.83912
2.1	0.08169	1.71538	5.5	0.76589	1.90258
2.2	0.08287	1.70768	5.6	0.77439	1.97246
2.3	0.08306	1.69927	5.7	0.77338	2.04852
2.4	0.08213	1.69018	5.8	0.76176	2.13035
2.5	0.07994	1.68043	5.9	0.73849	2.21733
2.6	0.07636	1.67006	6.0	0.70257	2.30865
2.7	0.07123	1.65914	6.1	0.65312	2.40329
2.8	0.06441	1.64773	6.2	0.58932	2.50005
2.9	0.05578	1.63591	6.3	0.51051	2.59757
3.0	0.04519	1.62380	6.4	0.41619	2.69428
3.1	0.03252	1.61152	6.5	0.30598	2.78852
3.2	0.01765	1.59920	6.6	0.17976	2.87848
3.3	+ 0.00046	1.58701	6.7	- 0.03757	2.96224
3.4	- 0.01913	1.57513	6.8	+ 0.12030	3.03785
3.5	0.04121	1.56377	6.9	0.29331	3.10332
3.6	0.06584	1.55315	7.0	0.48069	3.15662
3.7	0.09306	1.54351	7.1	0.68142	3.19582
3.8	0.12288	1.53513	7.2	0.89419	3.21900
3.9	0.15528	1.52829	7.3	1.11747	3.22439
4.0	0.19019	1.52330	7.4	1.34948	3.21037
4.1	0.22751	1.52046	7.5	1.58822	3.17548
4.2	0.26708	1.52012	7.6	1.83147	3.11846
4.3	0.30867	1.52260	7.7	2.07683	3.03833
4.4	0.35199	1.52826	7.8	2.32176	2.93436
4.5	- 0.39665	+ 1.53746	7.9	+ 2.56358	+ 2.80612

$t$	$\xi$	$\eta$	$t$	$\xi$	$\eta$
8.0	+ 2.79954	+ 2.65350	10.7	+ 1.01611	- 4.15771
8.1	3.02684	2.47675	10.8	0.68946	4.20497
8.2	3.24268	2.27643	10.9	0.36244	4.22480
8.3	3.44132	2.05346	11.0	+ 0.03751	4.21752
8.4	3.62911	1.80909	11.1	- 0.28294	4.18369
8.5	3.79455	1.54492	11.2	0.59662	4.12402
8.6	3.93834	1.26284	11.3	0.90130	4.03948
8.7	4.05838	0.96503	11.4	1.19489	3.93118
8.8	4.15285	0.65393	11.5	1.47538	3.80042
8.9	4.22025	0.33219	11.6	1.74094	3.64868
9.0	4.25940	+ 0.00260	11.7	1.98985	3.47756
9.1	4.26946	- 0.33190	11.8	2.22055	3.28884
9.2	4.24995	0.66832	11.9	2.43164	3.08440
9.3	4.20072	1.00364	12.0	2.62187	2.86624
9.4	4.12197	1.33485	12.1	2.79019	2.63650
9.5	4.01427	1.65903	12.2	2.93571	2.39738
9.6	3.87846	1.97333	12.3	3.05774	2.15121
9.7	3.71572	2.27509	12.4	3.15579	1.90039
9.8	3.52747	2.56179	12.5	3.22957	1.64739
9.9	3.31538	2.83110	12.6	3.27902	1.39475
10.0	3.08132	3.08093	12.7	3.30431	1.14507
10.1	2.82736	3.30939	12.8	3.30583	0.90098
10.2	2.55571	3.51487	12.9	3.28425	0.66512
10.3	2.26868	3.69596	13.0	3.24047	0.44018
10.4	1.96871	3.85155	13.1	3.17568	0.22884
10.5	1.65827	3.98075	13.2	3.09134	- 0.03375
10.6	+ 1.33989	- 4.08293	13.3	- 2.98919	+ 0.14246





# Bahnen im Probleme Restreint, die zu $C_4$ asymptotisch sind.



Elis Strömgen.

Otto S. Kristensen.

