IBK-582

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NUCLEAR ENGINE

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DEPARTMENT OF REACTOR PHYSICS AND DYNAMICS
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November 1967

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by

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1. INTRODUCTION

The Western approach to the problem of determining the expression for the effective resonance integral give its dependence on the S/M ratio, as

$$I_{eff} = a + b \frac{S}{M}$$

This is due to the use of Wigner's rational approximation for the escape probability function, or better said, only its part $P_o \approx \lambda/r$. This approximation was made on the basis of the plausibility arguments of its limiting values. Besides the fact that the maximal error reaches 30%, this approximation does not take care of the shape of the absorber element.

On the other hand the Russian model does not concern the shape of the absorber element either, and it gives

$$I_{eff} = a' + b' \sqrt{\frac{S}{M}}$$

In the analitical evaluation of this expression we tried to use the real functional dependence of the escape probability function in cylindrical geometry.

Beside the pure numerical approach to the problem given in /3/, the best method of evaluating the effective resonance integral is given in /1/. The disadvantage of this method is in calculating the "surface" term function, which is the function of three independent variables, seven interpolations are necessary for its evaluation. This includes a large error, and it is very unsuitable.

This has also been overcome by the proposed formula.

2. DERIVATION OF THE EXPRESSION FOR THE RESONANCE INTEGRAL IN TERMS OF NEUTRON CURRENTS

We considered a single cylindrical element, Fig.1, and one resonance. The usual assumptions of all the existing theories of resonance absorption are incorporated:

a) The flux is flat and equal in both media.

b) Resonances are widely spaced.

c) Cross sections in the resonance can be represented by the $\Psi(\xi, x)$ and $\chi(\xi, x)$ functions.

For the elementary absorbed neutron current arising from dV toward unit surface (Fig.1), we write

$$dj_s = S_o^o \, dA \, dz \frac{r}{\rho} \cos\beta \frac{1 - e^{-\Sigma_t \rho}}{4\pi \rho^2} \frac{\Sigma_a}{\Sigma_t} \qquad (2.1)$$

The geometrical parameters are given in Fig.1, the cross section notations are usual and S_o^o is the neutron source density. After integrating the overall volume of the fuel element (the fuel element is taken to be infinitely long), for the total absorbed current originating from the fuel element, we write

$$J_s = \frac{S_o^o}{2} \frac{\Sigma_a}{\Sigma_t} R - \frac{S_o^o}{4} \frac{\Sigma_a}{\Sigma_t} + \frac{S_o^o}{2\pi} \frac{\Sigma_a}{\Sigma_t^2} \int_{-1}^{+1} Ki_3(2R\Sigma_t \sqrt{1-u^2}) \, du \qquad \ldots\ldots \quad (2.2)$$

For the elementary absorbed current originating from the source in the moderator per unit surface of the element (Fig.2), we write

$$dj_m = S_1 dA dz \frac{r_1 \cos\beta}{\rho_1} \frac{e^{-\Sigma_1 \gamma}}{4\pi \rho_1^2} (1 - e^{-\Sigma_t \rho_o}) \frac{\Sigma_a}{\Sigma_t} \qquad (2.3)$$

where the notations are as before, with index 1 refered to moderator. After integration like in the previous case, for total absorbed current originating in the moderator, we write

$$J_m = \frac{S_1 \Sigma_a}{4 \Sigma_1 \Sigma_t} - \frac{S_1 \Sigma_a}{2 \pi \Sigma_t \Sigma_1} \int_{-1}^{+1} Ki_3 (2R \Sigma_t \sqrt{1-u^2}) dn \qquad (2.4)$$

On the basis of the definition for the effective resonance integral, we may write

$$S_o \int_E \left[J_s + J_m \right] dE = N_o \, I_{eff} \, \varphi \, V_o \qquad (2.5)$$

which after introduction of the expressions for J_s and J_m, and after small rearrangements, finely gives

$$I_{eff} = \frac{1}{N_o} \int_E \frac{\Sigma_{po} \Sigma_a}{\Sigma_t} \frac{dE}{E} + \frac{S_o}{4 N_o V_o} \int_E \frac{\Sigma_a (\Sigma_t - \Sigma_{po})}{\Sigma_t^2} G \, \frac{dE}{E}$$

...... (2.6)

where

(1) $$G = 1 - \frac{4}{\pi} \int_0^1 Ki_3 \, (2R \Sigma_t \sqrt{1-u^2}) \, du \qquad ~~(2.7)~~$$

Similar expression for the penetrability factor G was given by Rothenstein /4/. Unfortunately, this expression has never been used for further analytical investigation of the I_{eff} formula.

The method given in /1/ uses

$$G = \frac{\Sigma}{\lambda} P_o \qquad (2.8)$$

where P_o is given by the Jungh's expression /5/. We cite this formula, since it is given with an error in /5/,

$$P_o(\Sigma_t R) = \frac{2}{3} \Sigma_t R \left\{ 2 \left[\Sigma_t R \, I_o(\Sigma_t R) K_o(\Sigma_t R) + I_1(\Sigma_t R) K_1(\Sigma_t R) - 1 \right] + I_o(\Sigma_t R) K_1(\Sigma_t R) - I_1(\Sigma_t R) K_o(\Sigma_t R) + \frac{I_1(\Sigma_t R) K_1(\Sigma_t R)}{\Sigma_t R} \right\} \qquad (2.9)$$

I_o, I_1, K_o, K_1, being modified Bessel functions. Using the above formula and the IBM-360 - model 75 computer we have extended the table of collision probability for cylinders /5/. These results are given in Table 1.

A series expression of the Ki_3 function in (2.7) gives

$$G = 1 - \frac{4}{\pi} \sum_{n=o}^{\infty} \frac{Ki_3^{(n)}(2R\Sigma_t)}{n!} (2R\Sigma_t)^n C_n \qquad (2.10)$$

where

$$C_n = \int_o^1 \left(\sqrt{1 - n^2} - 1 \right)^n dn \qquad (2.11)$$

A general solution to this integral is

$$C_n = \frac{(-1)^n}{n+1}\left[2 + \frac{2n-1}{n-1} + \frac{(2n-1)(2n-3)}{(n-1)(n-2)} + \dots - \frac{(2n-1)(2n-3)\dots\ 2n-(2n-1)}{(n-1)(n-2)\ \dots\ n-(n-1)}\,\frac{2}{2}\,\frac{\pi}{2} \right] \tag{2.12}$$

The first ten values of these coefficients are:

$C_o = 1.0000000000$ $\quad C_5 = -0.02498243870$

$C_1 = -0.21460183660$ $\quad C_6 = 0.0185383130$

$C_2 = 0.09587033986$ $\quad C_7 = -0.0143122181$

$C_3 = -0.05475688725$ $\quad C_8 = 0.0113883522$

$C_4 = 0.03554618953$ $\quad C_9 = -0.0092802468$

Expression (2.10) may give the value for G with any degree of accuracy, which depends upon the number of terms **taken** in the series. Numerical investigation of the three and five terms series (Table 2, Fig.3) shows maximal error of 2.5% and 1.1% , respectively. For purposes of comparison the rational Wigner's approximation is given, also. Likewise, an approximate expression from (2.10) with any number of terms has correct limiting values.

Development around $q\ 2R\ \Sigma_o$ (Σ_o - peak cross section, q - parameter which will be determined later) a few first terms of (2.10), and suitable rearrangement gives the possibility to write

$$G = 1 - \frac{4}{\pi}|C_0| Ki_3(q2R\Sigma_0) + \frac{4}{\pi}\Big\{|C_0| Ki_2(q2R\Sigma_0)(2R\Sigma_t - q2R\Sigma_0) - |C_1| Ki_2(q2R\Sigma_0)(2R\Sigma_t)\Big\} -$$

$$- \frac{4}{\pi}\sum_{n=0}^{\infty}(2R\Sigma_t - q2R\Sigma_0)^n \frac{Ki_3^{(n)}(q2R\Sigma_0)}{n!}\Big[\frac{|C_0|}{(n+1)(n+2)}(2R\Sigma_t - q2R\Sigma_0)^2 - \frac{|C_1|}{n+1}(2R\Sigma_t)(2R\Sigma_t - q2R\Sigma_0) + \frac{|C_2|}{2}(2R\Sigma_t)^2\Big] - \frac{4}{\pi}\sum_{n=3}^{\infty}|C_n|\frac{Ki_3^{(n)}(2R\Sigma_t)^n}{n!}(2R\Sigma_t)^n \qquad (2.13)$$

Introduction of this expression into the resonance integral formula, gives

$$I_{eff} = \frac{1}{N_0}\int_E \frac{\Sigma_{po}\Sigma_a}{\Sigma_t}\frac{dE}{E} + \frac{S}{V}\frac{1}{4N_0}\Big[1 - \frac{4}{\pi}Ki_3(q2R\Sigma_0)\Big]\int_E \frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2}\frac{dE}{E} +$$

$$+ \frac{4}{\pi}Ki_2(q2R\Sigma_0)\frac{S}{4N_0V}\int_E \frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2}\Big[|C_0|(2R\Sigma_t - q2R\Sigma_0) - |C_1|\,2R\Sigma_t\Big]\frac{dE}{E}$$

$$- \frac{4}{\pi}\frac{S}{4VN_0}\Big\{\frac{K_{i1}^{(n)}(q2R\Sigma_0)}{n!}\Big[\frac{|C_0|}{(n+1)(n+2)}\int_E (2R\Sigma_t - q2R\Sigma_0)^{n+2}\frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2}\frac{dE}{E}$$

$$- \frac{|C_1|}{n+1}\int_E \frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2}(2R\Sigma_t)(2R\Sigma_t - q2R\Sigma_0)^{n+1}\frac{dE}{E} + \quad (?)$$

$q = \frac{\Sigma_t}{\Sigma_0}$, но $\Sigma_t = \Sigma_t\{\psi(r,x)\}$

$0, 1, 2 + \sum_{n=3}^{\infty}$

$$+ \frac{|C_2|}{2} \int_E \frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2} (2R\Sigma_t)^2 (2R\Sigma_t - q2R\Sigma_o)^n \frac{dE}{E} \Big] +$$

$$+ \sum_{n=3}^{\infty} |C_n| \int_E \frac{Ki_3^{(n)}(2R\Sigma_t)}{n!} (2R\Sigma_t)^n \frac{\Sigma_a(\Sigma_t - \Sigma_{po})}{\Sigma_t^2} \frac{dE}{E} \Big\} \qquad (2.14)$$

By a suitable choice of the parameter q it is possible to get a relatively simple approximate expression for the effective resonance integral, with proper limiting values and a good approximation in the whole range of R. Let us choose q in such a way that the third term of (2.14) is always zero. This will give

II

$$q = \text{[redacted]} \; \frac{\pi}{4} \cdot \frac{\frac{\pi}{2} - \beta J(\xi, \beta)}{K(\xi, \beta)} \qquad \text{~~(2.15)~~}$$

If we neglect the higher terms of the expression (2.14), we finely write

I

$$I_{eff} = \frac{\sigma_p \Gamma_\gamma}{E_o} J(\xi, \beta) +$$

$$+ \frac{S}{V} \frac{\Gamma_\gamma}{E_o} \frac{1}{4N\text{[redacted]}} K(\xi, \beta) \Big[1 - \frac{4}{\pi} \text{[redacted]} Ki_3(q2R\Sigma_o) \Big] \qquad \text{~~(2.16)~~}$$

It is very easy to show the conect limiting values of this formula

a) $R \to \infty$. Since $\frac{S}{V} = \frac{2}{R}$ and $Ki_3(\infty) \to 0$ the second term is tending to zero, and

$$I_{eff} = \frac{\epsilon_p \Gamma_\gamma}{E_o} J(\xi, \beta)$$

which represents the effective resonance integral for homogeneous meaxture.

b) $R \to 0$. Development of the Ki_3 function around zero, gives

$$I_{eff} = \frac{\sigma_p \Gamma_\gamma}{E_o} J(\xi, \beta) + \frac{2}{R} \frac{\Gamma_\gamma}{E_o} \frac{1}{4N_o} K(\xi, \beta) \Big[1 - \frac{4}{\pi} |C_o| (Ki_3(o) - Ki_2(o)\ q2R \Sigma_o) \Big]$$

All higher terms are zero since they appear in the form

$$\lim_{x \to o} x^{n+3} Ki_n(x) \to 0$$

Since $Ki_3(o) = \frac{\pi}{4}$, $Ki_2(o) = 1$, $\Big[|C_o| - |C_1|\Big] / |K_o| = \frac{\pi}{4}$, - iz algebraically follows that

$$I_{eff} = \frac{\Gamma_\gamma}{E_o} \sigma_o \frac{\pi}{2} = I_\infty$$

which is the infinite dilution limit.

Further analysis of the formula may show that for large R we immediately get Wigner's dependence, since

Ki_3 may be taken as zero. On the other hand for small R, the argument $x = q2R\Sigma_0$ of Ki_3 function is still large enough that the assumptotic exponsion of $Ki_3(x)$ is valid

$$Ki_3(x) \sim e^{-x}\sqrt{\frac{\pi}{2x}}\left[1 - \frac{B_3}{x} + \frac{C_3}{x^2} - \dots\right]$$

Introduction of this into (   ) and with further substitution of $e^{-x} \approx 1-x$, we write

$$I_{eff} = \frac{\sigma_{po}\Gamma_\gamma}{E_0} J(\xi,\beta) + \frac{\Gamma_\gamma}{E_0}\frac{1}{4N_0} K(\xi,\beta)\frac{S}{V} -$$

$$- \frac{\Gamma_\gamma}{E_0}\frac{1}{4N_0} K(\xi,\beta)\frac{4}{\pi}\sqrt{\frac{\pi}{2}}\,|C_0|\frac{1}{\sqrt{4q\Sigma_0}}\left(\frac{S}{V}\right)^{3/2} +$$

$$+ \frac{\Gamma_\gamma}{E_0}\frac{1}{4N_0} K(\xi,\beta)\frac{4}{\pi}\sqrt{2\Sigma_0 q}\sqrt{\frac{\pi}{2}}\,|C_0|\sqrt{\frac{S}{V}}$$

..... (2.17)

The last term of this expression will be dominant, because peak cross section Σ_0 exists in its numerator. Thus we obtain the proposed dependence by the Russian theory.

For a given material constitution and temperature, an assymptotic straight line

$$(I_{eff})' = \frac{\sigma_p\Gamma_\gamma}{E_0} J(\xi,\beta) + \frac{S}{V}\frac{\Gamma_\gamma}{E_0}\frac{1}{4N_0} K(\xi,\beta) \qquad (2.18)$$

is fixed. Deviation of the I_{eff} values from this straight line can now be discussed in terms of Ki_3 functions

a) For a given resonance (given ζ_0) and atomic absorber density (N_0), the deviation from the straight line will be larger with smaller R.

b) For oxide and carbide fuels (N_0 smaller) deviation from the straight line will be larger that for metals for the same resonance. Consequently, compound fuels will have "better" $\sqrt{\frac{S}{M}}$ dependence, than metallic fuels.

c) The temperature dependence of I_{eff} can be discussed by this formula rather easily.

d) Comparaison to /1/ shows that volume terms are the same, but surface terms are different. Surface terms coincide, also, for large R.

Interference corrections to the functions $J(\xi, \beta)$ and $K(\xi, \beta)$ can be made in the following way:

$$\Delta J_0 = \frac{\Psi}{\Psi + \beta + \delta\chi} - \frac{\Psi}{\Psi + \beta} = -\frac{\delta\Psi\chi}{(\Psi+\beta)^2}\left(1 - \frac{\delta\chi}{\Psi+\beta} + \frac{\delta^2\chi^2}{(\Psi+\beta)^2} - \dots\right)$$

$$\delta^2 \Delta J_i = \int_{-\infty}^{+\infty} \Delta J_0 dx = \delta^2 \int_{-\infty}^{+\infty} \frac{\Psi\chi^2}{(\Psi+\beta)^2} dx$$

Since the integrals of odd powers of the odd function $\chi(\xi, x)$ are equal to zeros. Finely

$$\mathcal{J}_1(\xi,\beta,\gamma) \approx \mathcal{J}(\xi,\beta) + \gamma^2 \int_0^\infty \frac{\Psi\chi^2}{(\Psi+\beta)^2} dx \quad (2.19)$$

This is similar to Rathenstein's correction /4/.

Using a similar procesude for the interference correction of the $K(\xi,\beta)$ function we have

$$K(\xi,\beta,\gamma) \approx K(\xi,\beta) + s\gamma^2 \Delta Ki(\xi,\beta) - 2$$
$$- 2\frac{\gamma^2}{\varsigma_0} \Delta \mathcal{J}_1(\xi,\beta)$$

where

$$\Delta Ki(\xi,\beta) = \int_0^\infty \frac{\Psi^2\chi^2}{(\Psi+\beta)^4} dx \quad (2.20)$$

Using the proposed /6/ rectangular model of the resonance, and accordingly redefined cross sections, any type of the resonance can be treated.

Calculation of I_{eff} in the lattice is given in /7/.

3. CONCLUSION

The best analytical approach to the problem is given in /4/, where artificially improved rational approximation is used. It never gives connect limiting values. (Something similar is also used in /8/). Furthermore, all connections in /4/ one treated separately.Both of these incorrecture - have been overcome in this work.

Our representation of the penetrability factor G_l allows further analytical treatment of the I_{eff} formula. Comparaison to /1/ shows that our representation of the surface term is much more handy. Interference correction to the function $J(\xi, \beta)$ is similar to the same correction in /4/, but interference correction to the function $K(\xi, \beta)$ has never before been treated.

Calculations of the numerical tables of $J(\xi, \beta)$, $K(\xi, \beta)$, $\Delta J_i(\xi, \beta)$, $\Delta Ki(\xi, \beta)$ are in progress. Function $J(\xi, \beta)$ has been tabulated by Dresner also in /1/. $K(\xi, \beta)$ has only been tabulated in /1/. Values of the functions are not accurate enough for lower values of ξ ,and they do not exist at all for ξ = 0.06, 0.07, 0.08, 0.09. The interpolation gap in this range is large. Our tables will be free of these incorrectnesses.

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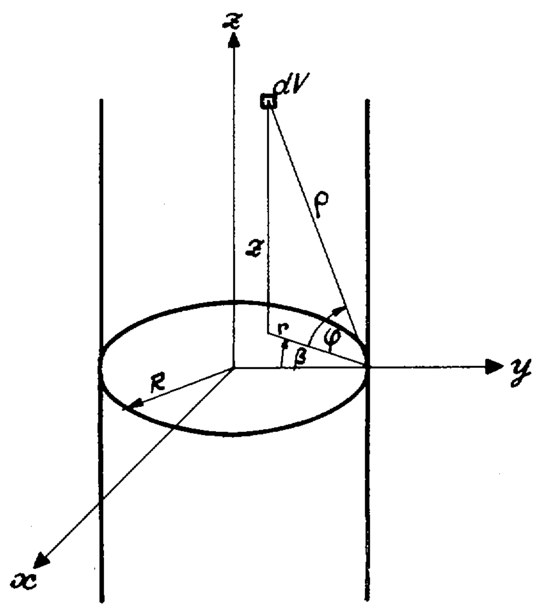


Fig. 1

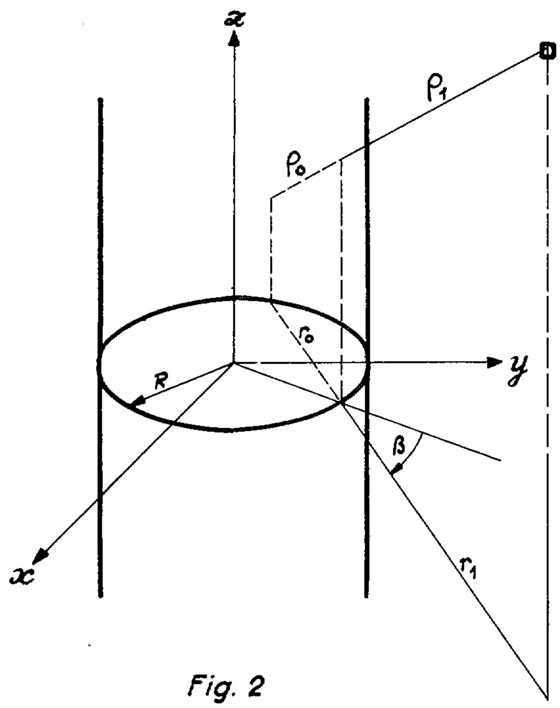
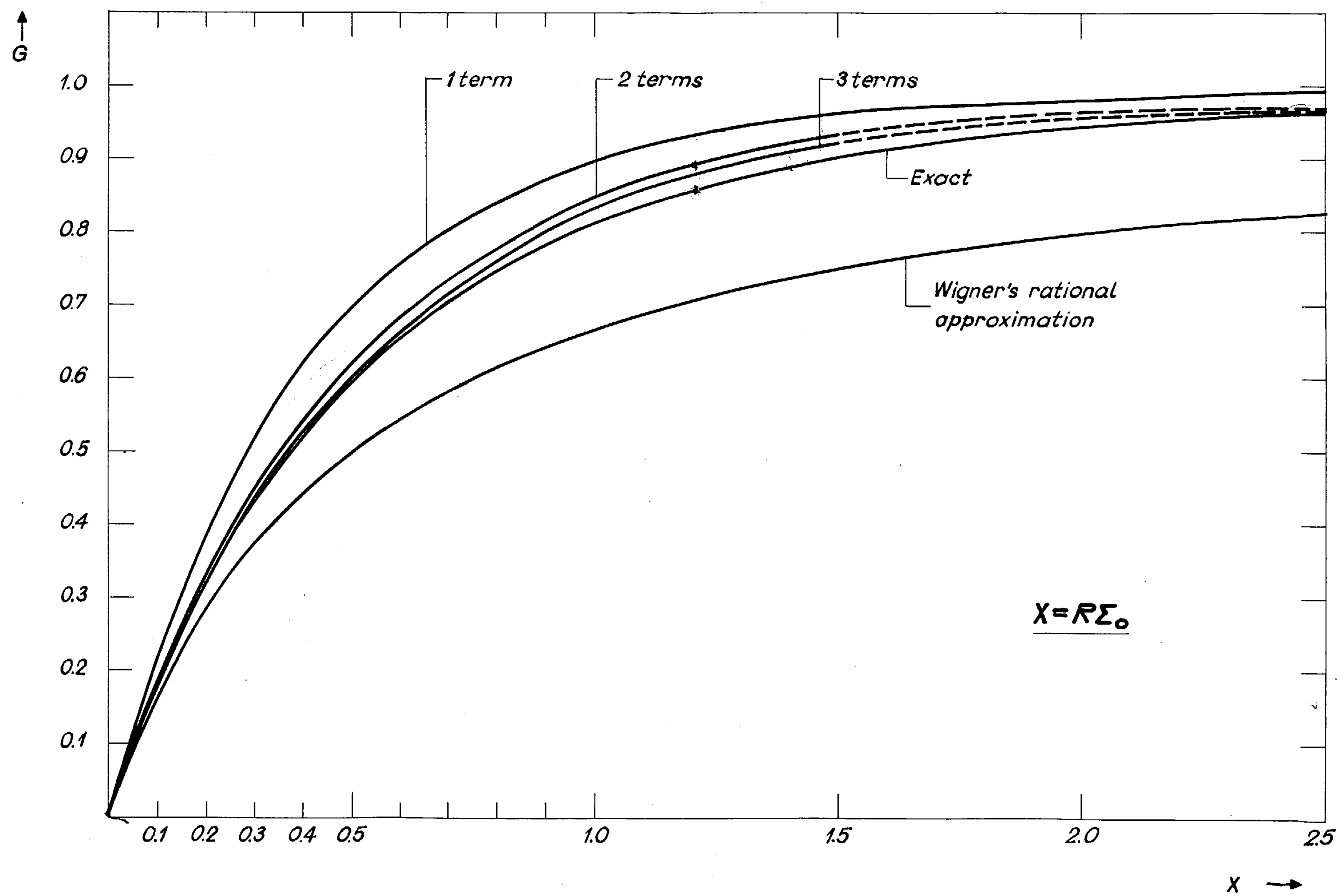


Fig. 2


G
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
1 term
2 terms
3 terms
Exact
Wigner's rational approximation
X = RΣ₀
0.1 0.2 0.3 0.4 0.5
1.0
1.5
2.0
2.5
X

ARG	ESC.PROB	COL.PROB	ARG	ESQ.PROB	COL.PROB
0.00	1.00000000	0.00000000	0.50	0.59594923	0.40405077
0.01	0.98696429	0.01303571	0.51	0.59081757	0.40918243
0.02	0.97438699	0.02561301	0.52	0.58575815	0.41424185
0.03	0.96219045	0.03780955	0.53	0.58077157	0.41922843
0.04	0.95033246	0.04966754	0.54	0.57585394	0.42414606
0.05	0.93878448	0.06121552	0.55	0.57100433	0.42899567
0.06	0.92752165	0.07247835	0.56	0.56622332	0.43377668
0.07	0.91653091	0.08346909	0.57	0.56150669	0.43849331
0.08	0.90579152	0.09420848	0.58	0.55685717	0.44314283
0.09	0.89529347	0.10470653	0.59	0.55226988	0.44773012
0.10	0.88502252	0.11497748	0.60	0.54774451	0.45225549
0.11	0.87497091	0.12502909	0.61	0.54327947	0.45672053
0.12	0.86512840	0.13487160	0.62	0.53887522	0.46112478
0.13	0.85548651	0.14451349	0.63	0.53452951	0.46547049
0.14	0.84603822	0.15396178	0.64	0.53024429	0.46975571
0.15	0.83677506	0.16322494	0.65	0.52601343	0.47398657
0.16	0.82769096	0.17230904	0.66	0.52183717	0.47816283
0.17	0.81878024	0.18121976	0.67	0.51771939	0.48228061
0.18	0.81003785	0.18996215	0.68	0.51365298	0.48624702
0.19	0.80145675	0.19854325	0.69	0.50963885	0.49036115
0.20	0.79303241	0.20696759	0.70	0.50567710	0.49432290
0.21	0.78476000	0.21524000	0.71	0.50176805	0.49823195
0.22	0.77663606	0.22336394	0.72	0.49790752	0.50209248
0.23	0.76865566	0.23134434	0.73	0.49409801	0.50590199
0.24	0.76081389	0.23918611	0.74	0.49033517	0.50966483
0.25	0.75310707	0.24689293	0.75	0.48662102	0.51337898
0.26	0.74553287	0.25446713	0.76	0.48295528	0.51704472
0.27	0.73808831	0.26191169	0.77	0.47933316	0.52066684
0.28	0.73076689	0.26923311	0.78	0.47575712	0.52424288
0.29	0.72356802	0.27643198	0.79	0.47222430	0.52777570
0.30	0.71648741	0.28351259	0.80	0.46873802	0.53126198
0.31	0.70952314	0.29047686	0.81	0.46529067	0.53470933
0.32	0.70266998	0.29733002	0.82	0.46188897	0.53811103
0.33	0.69592875	0.30407125	0.83	0.45852578	0.54147422
0.34	0.68929374	0.31070626	0.84	0.45520753	0.54479247
0.35	0.68276542	0.31723458	0.85	0.45192653	0.54807347
0.36	0.67633796	0.32366204	0.86	0.44868678	0.55131322
0.37	0.67001349	0.32998651	0.87	0.44548553	0.55451447
0.38	0.66378367	0.33621633	0.88	0.44232172	0.55767828
0.39	0.65765202	0.34234798	0.89	0.43919623	0.56080377
0.40	0.65161186	0.34838814	0.90	0.43610752	0.56389248
0.41	0.64566487	0.35433513	0.91	0.43305635	0.56694365
0.42	0.63980722	0.36019278	0.92	0.43003893	0.56996107
0.43	0.63403666	0.36596334	0.93	0.42705995	0.57294005
0.44	0.62835228	0.37164772	0.94	0.42411298	0.57588702
0.45	0.62275201	0.37724799	0.95	0.42120099	0.57879901
0.46	0.61723363	0.38276637	0.96	0.41832370	0.58167630
0.47	0.61179602	0.38820398	0.97	0.41548127	0.58451873
0.48	0.60643589	0.39356411	0.98	0.41266853	0.58733147
0.49	0.60115522	0.39884478	0.99	0.40988874	0.59011126

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
1.00	0.40714145	0.59285855	1.50	0.30156976	0.69843024
1.01	0.40442663	0.59557337	1.51	0.29995537	0.70004463
1.02	0.40174079	0.59825921	1.52	0.29835677	0.70164323
1.03	0.39908588	0.60091412	1.53	0.29677349	0.70322651
1.04	0.39645869	0.60354131	1.54	0.29520845	0.70479155
1.05	0.39386284	0.60613716	1.55	0.29365605	0.70634395
1.06	0.39129597	0.60870403	1.56	0.29211825	0.70788175
1.07	0.38875806	0.61124194	1.57	0.29059398	0.70940602
1.08	0.38624823	0.61375177	1.58	0.28908390	0.71091610
1.09	0.38376474	0.61623526	1.59	0.28758842	0.71241158
1.10	0.38130814	0.61869186	1.60	0.28610766	0.71389234
1.11	0.37888098	0.62111902	1.61	0.28464103	0.71535897
1.12	0.37647760	0.62352240	1.62	0.28318447	0.71681553
1.13	0.37410176	0.62589824	1.63	0.28174382	0.71825618
1.14	0.37175012	0.62824988	1.64	0.28031588	0.71968412
1.15	0.36942619	0.63057381	1.65	0.27890009	0.72109991
1.16	0.36712682	0.63287318	1.66	0.27749830	0.72250170
1.17	0.36485082	0.63514918	1.67	0.27610737	0.72389263
1.18	0.36259913	0.63740087	1.68	0.27472937	0.72527063
1.19	0.36037278	0.63962722	1.69	0.27336580	0.72663420
1.20	0.35816860	0.64183140	1.70	0.27201521	0.72798479
1.21	0.35598934	0.64401066	1.71	0.27067274	0.72932726
1.22	0.35383070	0.64616930	1.72	0.26934344	0.73065656
1.23	0.35169679	0.64830321	1.73	0.26802719	0.73197281
1.24	0.34958458	0.65041542	1.74	0.26672262	0.73327738
1.25	0.34749490	0.65250510	1.75	0.26542825	0.73457175
1.26	0.34542632	0.65457368	1.76	0.26414460	0.73585540
1.27	0.34337878	0.65662122	1.77	0.26287431	0.73712569
1.28	0.34135187	0.65864813	1.78	0.26161337	0.73838663
1.29	0.33934641	0.66065359	1.79	0.26036519	0.73963481
1.30	0.33736169	0.66263831	1.80	0.25912523	0.74087477
1.31	0.33539701	0.66460299	1.81	0.25789791	0.74210209
1.32	0.33345312	0.66654688	1.82	0.25667983	0.74332017
1.33	0.33152705	0.66847295	1.83	0.25547540	0.74452460
1.34	0.32962149	0.67037851	1.84	0.25427645	0.74572355
1.35	0.32773483	0.67226517	1.85	0.25309217	0.74690783
1.36	0.32586759	0.67413241	1.86	0.25191402	0.74808598
1.37	0.32401884	0.67598116	1.87	0.25074941	0.74925059
1.38	0.32218802	0.67781198	1.88	0.24959242	0.75040758
1.39	0.32037497	0.67962503	1.89	0.24844456	0.75155544
1.40	0.31857985	0.68142015	1.90	0.24730945	0.75269055
1.41	0.31680471	0.68319529	1.91	0.24618065	0.75381935
1.42	0.31504482	0.68495518	1.92	0.24506414	0.75493586
1.43	0.31330186	0.68669814	1.93	0.24395490	0.75604510
1.44	0.31157655	0.68842345	1.94	0.24285340	0.75714660
1.45	0.30986685	0.69013315	1.95	0.24176538	0.75823462
1.46	0.30817711	0.69182289	1.96	0.24068093	0.75931907
1.47	0.30650115	0.69349885	1.97	0.23960769	0.76039231
1.48	0.30483961	0.69516039	1.98	0.23854303	0.76145697
1.49	0.30319655	0.69680345	1.99	0.23749036	0.76250964

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
2.00	0.23644406	0.76355594	2.50	0.19322503	0.80677497
2.01	0.23540342	0.76459658	2.51	0.19251227	0.80748773
2.02	0.23437065	0.76562935	2.52	0.19180971	0.80819029
2.03	0.23335183	0.76664817	2.53	0.19110656	0.80889344
2.04	0.23234034	0.76765966	2.54	0.19040757	0.80959243
2.05	0.23133516	0.76866484	2.55	0.18971467	0.81028533
2.06	0.23033625	0.76966375	2.56	0.18902934	0.81097066
2.07	0.22934699	0.77065301	2.57	0.18834072	0.81165928
2.08	0.22836220	0.77163780	2.58	0.18766111	0.81233889
2.09	0.22738940	0.77261060	2.59	0.18698680	0.81301320
2.10	0.22642332	0.77357668	2.60	0.18631953	0.81368047
2.11	0.22546697	0.77453303	2.61	0.18566078	0.81433922
2.12	0.22451842	0.77548158	2.62	0.18499768	0.81500232
2.13	0.22357321	0.77642679	2.63	0.18434149	0.81565851
2.14	0.22263587	0.77736413	2.64	0.18368971	0.81631029
2.15	0.22170490	0.77829510	2.65	0.18304235	0.81695765
2.16	0.22078317	0.77921683	2.66	0.18239909	0.81760091
2.17	0.21986759	0.78013241	2.67	0.18175995	0.81824005
2.18	0.21895969	0.78104031	2.68	0.18112469	0.81887531
2.19	0.21806401	0.78193599	2.69	0.18049878	0.81950122
2.20	0.21717018	0.78282982	2.70	0.17987293	0.82012707
2.21	0.21628296	0.78371704	2.71	0.17924863	0.82075137
2.22	0.21540397	0.78459603	2.72	0.17863506	0.82136494
2.23	0.21452683	0.78547317	2.73	0.17801791	0.82198209
2.24	0.21365851	0.78634149	2.74	0.17740870	0.82259130
2.25	0.21279764	0.78720236	2.75	0.17680460	0.82319540
2.26	0.21194488	0.78805512	2.76	0.17619783	0.82380217
2.27	0.21109754	0.78890246	2.77	0.17560691	0.82439309
2.28	0.21025634	0.78974366	2.78	0.17501080	0.82498920
2.29	0.20942354	0.79057646	2.79	0.17442107	0.82557893
2.30	0.20859420	0.79140580	2.80	0.17383385	0.82616615
2.31	0.20776975	0.79223025	2.81	0.17324853	0.82675147
2.32	0.20695406	0.79304594	2.82	0.17267114	0.82732886
2.33	0.20614165	0.79385835	2.83	0.17209792	0.82790208
2.34	0.20533907	0.79466093	2.84	0.17152429	0.82847571
2.35	0.20454007	0.79545993	2.85	0.17095995	0.82904005
2.36	0.20374900	0.79625100	2.86	0.17039555	0.82960445
2.37	0.20296198	0.79703802	2.87	0.16983455	0.83016545
2.38	0.20217884	0.79782116	2.88	0.16927654	0.83072346
2.39	0.20140183	0.79859817	2.89	0.16872394	0.83127606
2.40	0.20063180	0.79936820	2.90	0.16817033	0.83182967
2.41	0.19986498	0.80013502	2.91	0.16762388	0.83237612
2.42	0.19910634	0.80089366	2.92	0.16707993	0.83292007
2.43	0.19835436	0.80164564	2.93	0.16654074	0.83345926
2.44	0.19760537	0.80239463	2.94	0.16600853	0.83399147
2.45	0.19686550	0.80313450	2.95	0.16547650	0.83452350
2.46	0.19612658	0.80387342	2.96	0.16494536	0.83505464
2.47	0.19539315	0.80460685	2.97	0.16441798	0.83558202
2.48	0.19466388	0.80533612	2.98	0.16389138	0.83610862
2.49	0.19393939	0.80606061	2.99	0.16337079	0.83662921

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
3.00	0.16285419	0.83714581	3.50	0.14050740	0.85949260
3.01	0.16234148	0.83765852	3.51	0.14012480	0.85987520
3.02	0.16183281	0.83816719	3.52	0.13974220	0.86025780
3.03	0.16132545	0.83867455	3.53	0.13935745	0.86064255
3.04	0.16082025	0.83917975	3.54	0.13897771	0.86102229
3.05	0.16031879	0.83968121	3.55	0.13860279	0.86139721
3.06	0.15981632	0.84018368	3.56	0.13822138	0.86177862
3.07	0.15932173	0.84067827	3.57	0.13784629	0.86215371
3.08	0.15882820	0.84117180	3.58	0.13747638	0.86252362
3.09	0.15833998	0.84166002	3.59	0.13710421	0.86289579
3.10	0.15785700	0.84214300	3.60	0.13674122	0.86325878
3.11	0.15736926	0.84263074	3.61	0.13637578	0.86362422
3.12	0.15689003	0.84310997	3.62	0.13600773	0.86399227
3.13	0.15641242	0.84358758	3.63	0.13564658	0.86435342
3.14	0.15593296	0.84406704	3.64	0.13528270	0.86471730
3.15	0.15546268	0.84453732	3.65	0.13492596	0.86507404
3.16	0.15499103	0.84500897	3.66	0.13456827	0.86543173
3.17	0.15452403	0.84547597	3.67	0.13421279	0.86578721
3.18	0.15406412	0.84593588	3.68	0.13386446	0.86613554
3.19	0.15360200	0.84639800	3.69	0.13351482	0.86648518
3.20	0.15314245	0.84685755	3.70	0.13316524	0.86683476
3.21	0.15268743	0.84731257	3.71	0.13281506	0.86718494
3.22	0.15223241	0.84776759	3.72	0.13246632	0.86753368
3.23	0.15177757	0.84822243	3.73	0.13212126	0.86787874
3.24	0.15132898	0.84867102	3.74	0.13177866	0.86822134
3.25	0.15088207	0.84911793	3.75	0.13143981	0.86856019
3.26	0.15043765	0.84956235	3.76	0.13110507	0.86889493
3.27	0.15000379	0.84999621	3.77	0.13076705	0.86923295
3.28	0.14956301	0.85043699	3.78	0.13043046	0.86956954
3.29	0.14912826	0.85087174	3.79	0.13009530	0.86990470
3.30	0.14869291	0.85130709	3.80	0.12976176	0.87023824
3.31	0.14825934	0.85174066	3.81	0.12942678	0.87057322
3.32	0.14783168	0.85216832	3.82	0.12910092	0.87089908
3.33	0.14740533	0.85259467	3.83	0.12877625	0.87122375
3.34	0.14698070	0.85301930	3.84	0.12844795	0.87155205
3.35	0.14656383	0.85343617	3.85	0.12812871	0.87187129
3.36	0.14614367	0.85385633	3.86	0.12780768	0.87219232
3.37	0.14572734	0.85427266	3.87	0.12748539	0.87251461
3.38	0.14531201	0.85468799	3.88	0.12716442	0.87283558
3.39	0.14489555	0.85510445	3.89	0.12684202	0.87315798
3.40	0.14448684	0.85551316	3.90	0.12652576	0.87347424
3.41	0.14407897	0.85592103	3.91	0.12621301	0.87378699
3.42	0.14367026	0.85632974	3.92	0.12589860	0.87410140
3.43	0.14327556	0.85672444	3.93	0.12559056	0.87440944
3.44	0.14287257	0.85712743	3.94	0.12528312	0.87471688
3.45	0.14247274	0.85752726	3.95	0.12497419	0.87502581
3.46	0.14207578	0.85792422	3.96	0.12466633	0.87533367
3.47	0.14167726	0.85832274	3.97	0.12435627	0.87564373
3.48	0.14128840	0.85871160	3.98	0.12405008	0.87594992
3.49	0.14089543	0.85910457	3.99	0.12375200	0.87624800

ARG	ESC.PROB	CCL.PROB	ARG	ESC.PROB	COL.PROB
4.00	0.12345243	0.87654757	5.00	0.09920692	0.90079308
4.02	0.12284994	0.87715006	5.02	0.09880400	0.90119600
4.04	0.12225503	0.87774497	5.04	0.09842384	0.90157616
4.06	0.12167060	0.87832940	5.06	0.09804350	0.90195650
4.08	0.12109101	0.87890899	5.08	0.09766722	0.90233278
4.10	0.12051302	0.87948698	5.10	0.09728324	0.90271676
4.12	0.11994195	0.88005805	5.12	0.09690934	0.90309066
4.14	0.11938053	0.88061947	5.14	0.09654438	0.90345562
4.16	0.11881977	0.88118023	5.16	0.09617579	0.90882421
4.18	0.11826074	0.88173926	5.18	0.09579682	0.90420318
4.20	0.11770993	0.88229007	5.20	0.09543669	0.90456331
4.22	0.11717075	0.88282925	5.22	0.09508610	0.90491390
4.24	0.11662889	0.88337111	5.24	0.09472144	0.90527856
4.26	0.11608988	0.88391012	5.26	0.09436876	0.90563124
4.28	0.11555904	0.88444096	5.28	0.09401149	0.90598851
4.30	0.11503899	0.88496101	5.30	0.09366733	0.90633267
4.32	0.11451834	0.88548166	5.32	0.09332490	0.90667510
4.34	0.11399704	0.88600296	5.34	0.09297061	0.90702939
4.36	0.11348581	0.88651419	5.36	0.09262878	0.90737122
4.38	0.11298490	0.88701510	5.38	0.09229946	0.90770054
4.40	0.11247647	0.88752353	5.40	0.09195769	0.90804281
4.42	0.11196953	0.88803047	5.42	0.09161764	0.90838236
4.44	0.11147529	0.88852471	5.44	0.09128994	0.90871006
4.46	0.11099064	0.88900936	5.46	0.09096426	0.90903574
4.48	0.11050713	0.88949287	5.48	0.09062940	0.90937060
4.50	0.11002666	0.88997334	5.50	0.09031022	0.90968978
4.52	0.10953480	0.89046520	5.52	0.08998126	0.91001874
4.54	0.10907000	0.89093000	5.54	0.08965743	0.91034257
4.56	0.10860014	0.89139986	5.56	0.08934945	0.91065055
4.58	0.10813296	0.89186704	5.58	0.08903491	0.91096509
4.60	0.10766804	0.89233196	5.60	0.08870780	0.91129220
4.62	0.10720229	0.89279771	5.62	0.08840293	0.91159707
4.64	0.10675442	0.89324558	5.64	0.08809561	0.91190439
4.66	0.10631239	0.89368761	5.66	0.08778542	0.91221458
4.68	0.10586023	0.89413977	5.68	0.08746910	0.91253090
4.70	0.10541600	0.89458400	5.70	0.08717185	0.91282815
4.72	0.10497671	0.89502329	5.72	0.08688271	0.91311729
4.74	0.10454774	0.89545226	5.74	0.08657587	0.91342413
4.76	0.10410595	0.89589405	5.76	0.08627719	0.91372281
4.78	0.10368443	0.89631557	5.78	0.08597845	0.91402155
4.80	0.10326076	0.89673924	5.80	0.08569264	0.91430736
4.82	0.10283637	0.89716363	5.82	0.08540279	0.91459721
4.84	0.10242146	0.89757854	5.84	0.08510566	0.91489434
4.86	0.10200447	0.89799553	5.86	0.08482409	0.91517591
4.88	0.10159779	0.89840221	5.88	0.08453929	0.91546071
4.90	0.10118723	0.89881277	5.90	0.08425432	0.91574568
4.92	0.10077620	0.89922380	5.92	0.08396238	0.91603762
4.94	0.10037452	0.89962548	5.94	0.08368975	0.91631025
4.96	0.09998345	0.90001655	5.96	0.08342016	0.91657984
4.98	0.09959036	0.90040964	5.98	0.08314383	0.91685617

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
6.00	0.08287877	0.91712123	7.00	0.07112974	0.92887026
6.02	0.08259028	0.91740972	7.02	0.07091427	0.92908573
6.04	0.08231360	0.91768640	7.04	0.07071853	0.92928147
6.06	0.08205593	0.91794407	7.06	0.07053006	0.92946994
6.08	0.08178675	0.91821325	7.08	0.07033032	0.92966968
6.10	0.08151668	0.91848332	7.10	0.07012838	0.92987162
6.12	0.08125043	0.91874957	7.12	0.06992388	0.93007612
6.14	0.08099991	0.91900009	7.14	0.06974012	0.93025988
6.16	0.08073652	0.91926348	7.16	0.06954485	0.93045515
6.18	0.08047312	0.91952688	7.18	0.06934708	0.93065292
6.20	0.08021325	0.91978675	7.20	0.06915635	0.93084365
6.22	0.07996458	0.92003542	7.22	0.06897199	0.93102801
6.24	0.07971513	0.92028487	7.24	0.06878561	0.93121439
6.26	0.07945293	0.92054707	7.26	0.06858706	0.93141294
6.28	0.07920247	0.92079753	7.28	0.06839556	0.93160444
6.30	0.07895952	0.92104048	7.30	0.06822467	0.93177533
6.32	0.07871521	0.92128479	7.32	0.06804186	0.93195814
6.34	0.07846648	0.92153352	7.34	0.06783783	0.93216217
6.36	0.07821286	0.92178714	7.36	0.06766385	0.93233615
6.38	0.07798272	0.92201728	7.38	0.06749696	0.93250304
6.40	0.07774347	0.92225653	7.40	0.06731290	0.93268710
6.42	0.07748669	0.92251331	7.42	0.06712657	0.93287343
6.44	0.07724518	0.92275482	7.44	0.06693619	0.93306381
6.46	0.07702327	0.92297673	7.46	0.06675750	0.93324250
6.48	0.07678771	0.92321229	7.48	0.06658167	0.93341833
6.50	0.07655567	0.92344433	7.50	0.06641239	0.93358761
6.52	0.07631397	0.92368603	7.52	0.06621575	0.93378425
6.54	0.07607847	0.92392153	7.54	0.06602240	0.93397760
6.56	0.07585937	0.92414063	7.56	0.06586832	0.93413168
6.58	0.07563049	0.92436951	7.58	0.06569147	0.93430853
6.60	0.07539141	0.92460859	7.60	0.06550807	0.93449193
6.62	0.07516825	0.92483175	7.62	0.06534058	0.93465942
6.64	0.07495230	0.92504770	7.64	0.06518394	0.93481606
6.66	0.07473004	0.92526996	7.66	0.06500030	0.93499970
6.68	0.07449788	0.92550212	7.68	0.06482852	0.93517148
6.70	0.07428139	0.92571861	7.70	0.06466323	0.93533677
6.72	0.07406789	0.92593211	7.72	0.06449962	0.93550038
6.74	0.07384801	0.92615199	7.74	0.06435239	0.93564761
6.76	0.07362258	0.92637742	7.76	0.06414741	0.93585259
6.78	0.07341206	0.92658794	7.78	0.06399411	0.93600589
6.80	0.07319653	0.92680347	7.80	0.06384784	0.93615216
6.82	0.07299149	0.92700851	7.82	0.06368321	0.93631679
6.84	0.07277608	0.92722392	7.84	0.06351459	0.93648541
6.86	0.07256341	0.92743659	7.86	0.06335753	0.93664247
6.88	0.07235307	0.92764693	7.88	0.06320840	0.93679160
6.90	0.07215410	0.92784590	7.90	0.06304985	0.93695015
6.92	0.07193065	0.92806935	7.92	0.06286836	0.93713164
6.94	0.07172352	0.92827648	7.94	0.06272906	0.93727094
6.96	0.07152754	0.92847246	7.96	0.06257576	0.93742424
6.98	0.07132983	0.92867017	7.98	0.06241873	0.93758130

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
8.00	0.06227934	0.93772072	9.00	0.05540182	0.94459820
8.02	0.06209491	0.93790513	9.02	0.05523583	0.94476420
8.04	0.06191226	0.93808776	9.04	0.05510577	0.94489425
8.06	0.06179264	0.93820739	9.06	0.05499988	0.94500017
8.08	0.06163833	0.93836170	9.08	0.05487133	0.94512368
8.10	0.06146461	0.93853539	9.10	0.05474427	0.94525576
8.12	0.06130315	0.93869686	9.12	0.05464735	0.94535267
8.14	0.06121177	0.93878824	9.14	0.05451643	0.94548362
8.16	0.06104279	0.93895721	9.16	0.05440429	0.94559574
8.18	0.06087514	0.93912488	9.18	0.05425780	0.94574225
8.20	0.06070392	0.93929613	9.20	0.05415351	0.94584650
8.22	0.06060241	0.93939763	9.22	0.05404468	0.94595534
8.24	0.06045528	0.93954474	9.24	0.05393041	0.94606960
8.26	0.06028831	0.93971169	9.26	0.05381767	0.94618237
8.28	0.06014879	0.93985122	9.28	0.05368814	0.94631189
8.30	0.06000602	0.93999398	9.30	0.05355950	0.94644052
8.32	0.05986925	0.94013077	9.32	0.05347315	0.94652689
8.34	0.05972371	0.94027632	9.34	0.05334652	0.94665349
8.36	0.05955842	0.94044161	9.36	0.05325093	0.94674909
8.38	0.05944275	0.94055730	9.38	0.05314409	0.94685596
8.40	0.05928493	0.94071507	9.40	0.05303226	0.94696778
8.42	0.05916630	0.94083375	9.42	0.05288518	0.94711483
8.44	0.05898961	0.94101042	9.44	0.05275720	0.94724280
8.46	0.05887958	0.94112045	9.46	0.05271464	0.94728541
8.48	0.05872779	0.94127226	9.48	0.05257045	0.94742960
8.50	0.05863051	0.94136953	9.50	0.05248166	0.94751835
8.52	0.05845368	0.94154632	9.52	0.05235747	0.94764256
8.54	0.05833319	0.94166684	9.54	0.05221582	0.94778419
8.56	0.05820223	0.94179779	9.56	0.05213616	0.94786388
8.58	0.05806202	0.94193798	9.58	0.05202648	0.94797355
8.60	0.05793937	0.94206065	9.60	0.05189363	0.94810641
8.62	0.05776854	0.94223148	9.62	0.05181058	0.94818944
8.64	0.05765368	0.94234633	9.64	0.05170996	0.94829005
8.66	0.05751820	0.94248182	9.66	0.05157942	0.94842058
8.68	0.05738419	0.94261587	9.68	0.05146850	0.94853151
8.70	0.05725126	0.94274879	9.70	0.05138289	0.94861716
8.72	0.05711396	0.94288605	9.72	0.05125538	0.94874465
8.74	0.05701690	0.94298315	9.74	0.05116546	0.94883454
8.76	0.05687152	0.94312853	9.76	0.05104556	0.94895446
8.78	0.05672632	0.94327372	9.78	0.05093892	0.94906110
8.80	0.05661657	0.94338346	9.80	0.05087087	0.94912916
8.82	0.05649641	0.94350362	9.82	0.05076553	0.94923449
8.84	0.05638330	0.94361675	9.84	0.05065531	0.94934469
8.86	0.05624308	0.94375694	9.86	0.05053321	0.94946682
8.88	0.05613234	0.94386768	9.88	0.05046851	0.94953150
8.90	0.05598883	0.94401121	9.90	0.05034170	0.94965833
8.92	0.05585757	0.94414246	9.92	0.05022842	0.94977158
8.94	0.05571019	0.94428986	9.94	0.05011568	0.94988436
8.96	0.05562179	0.94437826	9.96	0.05004176	0.94995826
8.98	0.05549399	0.94450605	9.98	0.04992453	0.95007551

ARG	ESC.PROB	COL.PROB	ARG	ESC.PROB	COL.PROB
10.00	0.04987818	0.95012182	11.00	0.04531226	0.95468777
10.02	0.04972388	0.95027614	11.02	0.04518141	0.95481861
10.04	0.04964754	0.95035249	11.04	0.04509309	0.95490694
10.06	0.04955256	0.95044744	11.06	0.04504794	0.95495212
10.08	0.04945824	0.95054179	11.08	0.04495367	0.95504636
10.10	0.04933877	0.95066124	11.10	0.04488176	0.95511824
10.12	0.04925250	0.95074755	11.12	0.04479510	0.95520490
10.14	0.04916750	0.95083255	11.14	0.04472403	0.95527601
10.16	0.04906306	0.95093697	11.16	0.04466758	0.95533246
10.18	0.04894030	0.95105970	11.18	0.04452697	0.95547307
10.20	0.04885055	0.95114946	11.20	0.04446490	0.95553511
10.22	0.04878148	0.95121855	11.22	0.04441727	0.95558274
10.24	0.04868041	0.95131963	11.24	0.04433479	0.95566523
10.26	0.04856043	0.95143962	11.26	0.04423845	0.95576155
10.28	0.04848715	0.95151287	11.28	0.04414283	0.95585722
10.30	0.04841441	0.95158559	11.30	0.04409799	0.95590204
10.32	0.04832950	0.95167053	11.32	0.04401000	0.95599002
10.34	0.04819266	0.95180738	11.34	0.04391621	0.95608383
10.36	0.04809597	0.95190406	11.36	0.04383680	0.95616323
10.38	0.04801313	0.95198691	11.38	0.04376529	0.95623475
10.40	0.04791669	0.95208335	11.40	0.04369450	0.95630550
10.42	0.04783557	0.95216447	11.42	0.04360987	0.95639014
10.44	0.04770848	0.95229155	11.44	0.04352580	0.95647424
10.46	0.04762278	0.95237726	11.46	0.04347134	0.95652866
10.48	0.04754373	0.95245630	11.48	0.04338769	0.95661235
10.50	0.04745883	0.95254117	11.50	0.04335664	0.95664340
10.52	0.04732744	0.95267260	11.52	0.04321554	0.95678449
10.54	0.04722321	0.95277679	11.54	0.04317072	0.95682931
10.56	0.04716048	0.95283955	11.56	0.04310419	0.95689583
10.58	0.04705803	0.95294201	11.58	0.04303811	0.95696193
10.60	0.04696351	0.95303655	11.60	0.04295076	0.95704925
10.62	0.04688806	0.95311195	11.62	0.04287072	0.95712930
10.64	0.04679438	0.95320565	11.64	0.04281433	0.95718569
10.66	0.04672166	0.95327836	11.66	0.04274281	0.95725721
10.68	0.04660949	0.95339054	11.68	0.04262009	0.95737994
10.70	0.04653789	0.95346212	11.70	0.04258019	0.95741981
10.72	0.04644655	0.95355350	11.72	0.04250263	0.95749742
10.74	0.04636250	0.95363754	11.74	0.04246373	0.95753628
10.76	0.04627965	0.95372039	11.76	0.04237231	0.95762771
10.78	0.04618370	0.95381635	11.78	0.04228891	0.95771110
10.80	0.04612181	0.95387822	11.80	0.04222121	0.95777881
10.82	0.04606209	0.95393795	11.82	0.04214700	0.95785302
10.84	0.04596055	0.95403945	11.84	0.04209486	0.95790517
10.86	0.04583282	0.95416719	11.86	0.04199876	0.95800126
10.88	0.04575991	0.95424014	11.88	0.04194038	0.95805967
10.90	0.04569579	0.95430422	11.90	0.04188273	0.95811731
10.92	0.04559655	0.95440346	11.92	0.04178733	0.95821267
10.94	0.04550574	0.95449430	11.94	0.04173110	0.95826894
10.96	0.04544328	0.95455676	11.96	0.04168230	0.95831776
10.98	0.04536033	0.95463967	11.98	0.04160393	0.95839608
			12.00	0.04156410	0.95843595

Table II

x	3 terms G	Δ (%)	5 terms G	Δ (%)
0.	0.0	0.0	0.0	0.0
0.1	0.1771849834	0.1022	0.1770243687	0.0023 (?)
0.2	0.3181723923	0.3026	0.3172380514	0.0082
0.3	0.4322473319	0.5473	0.4299773103	0.0193
0.4	0.5255314569	0.8124	0.5215021268	0.0395
0.5	0.6023652938	1.0764	0.5963376446	0.0649
0.6	0.6660410259	1.3298	0.6579457791	0.0981
0.8	0.7628560556	1.7163	0.7509357064	0.1269
1.0	0.8315765719	2.1216	0.8167680667	0.3031
1.5	0.9275109060	2.5202	0.9104768039	0.6374
2.0	0.9687299269	2.421	0.9562866705	1.1088
3.0	0.9943391856	1.758	0.9879318737	1.1024
4.0	0.9990081474	1.1469	0.9969360383	0.9371
5.0	0.9998308586	0.7589	0.9992732155	0.7027

Published by:
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BEOGRAD - VINČA
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