<u>Descrierea statistică a dezintegrărilor radioactive:</u> <u>distribuțiile statistice Poisson și Gauss</u>

1. Scopul lucrarii:

verificarea experimentală a distribuțiilor statistice Poisson și Gauss.

2. Rezumat al teoriei:

Lucrarea analizează două tipuri de distribuții statistice: distribuția Poisson și distribuția Gauss, utilizate pentru descrierea evenimentelor întâmplătoare.

- 1. Distributia Poisson este aplicabilă evenimentelor discrete, întâmplătoare, și independente si in cazul unui număr mic de evenimente, distribuția este asimetrică.
- 2. Distributia Gauss este o distribuție continuă aplicabilă evenimentelor variabile, este simetrică și este rezultatul limită pentru un număr mare de evenimente, conform teoremei limitei centrale.

3. Modul de lucru:

Pentru acest experiment au fost folosite:

- Sursa radioactiva 241Am
- Contor Geiger-Müller pentru detectarea impulsurilor radioactive.
- Sistem wireless pentru transferul datelor către un calculator.

Pentru distribuția Poisson:

- Se setează timpul de măsurare la 1s si se realizează 1024 măsurători.
- Se poziționează sursa radioactivă la 0,2 cm de detector pentru a masura intre 0-11 imp/sec.
- Se înregistrează datele și se compară cu distribuția teoretică Poisson și, ulterior, cu distribuția Gauss.

Pentru distribuția Gauss:

- Se setează timpul de măsurare la 1s si se realizează 2048 măsurători.
- Sursa radioactivă se poziționează la 1cm de detector pentru a obtine intre 626 si 825 imp/sec.
- Datele sunt procesate similar, comparându-se cu distribuțiile Poisson și Gauss.

4. Rezultate:

Pentru distributia Poisson:

-Tabelul 1. Frecvențele experimentale de apariție a impulsurilor datorate sursei radioactive pentru un număr (mediu) mic de impulsuri:

n	k_exp	nk_exp	Р	k_th_P	P_G	k_th_G
0	48	0	0.046118072	47.59	0.04884427	50.41
1	150	150	0.141884572	146.42	0.112856532	116.47
2	235	470	0.218257518	225.24	0.188398298	194.43
3	225	675	0.223826751	230.99	0.22722936	234.5
4	174	696	0.172153569	177.66	0.198010906	204.35
5	101	505	0.105927826	109.32	0.124666846	128.66
6	49	294	0.054315382	56.05	0.056708744	58.52
7	25	175	0.023872002	24.64	0.018637441	19.23
8	18	144	0.009180427	9.47	0.004425473	4.57
9	5	45	0.003138227	3.24	0.000759225	0.78
10	1	10	0.000965491	1	9.41E-05	0.1
11	1	11	0.000270035	0.28	8.43E-06	0.01

-Rezultate:

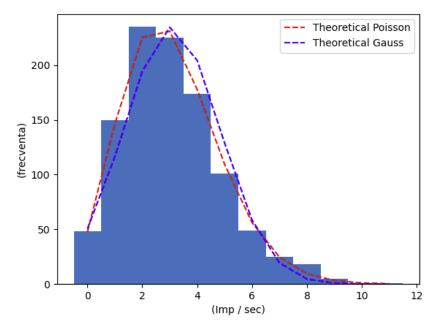
$$N = 1032$$

$$sigma = 3175$$

$$a = 3.076550387596899$$

$$sum_pg = 0.9806396275768962$$

-Histograma

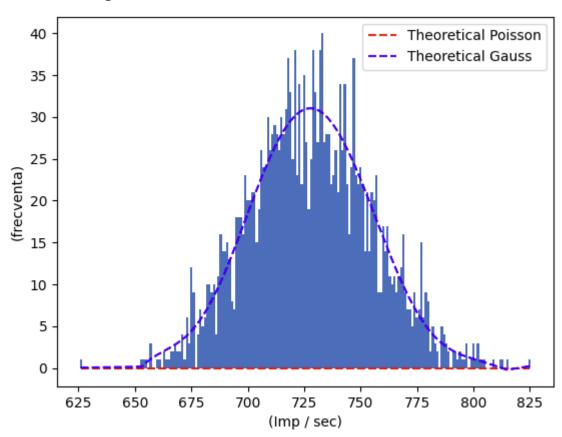


Pentru distributia Gauss:

-Rezultate

N = 2115 sigma = 1539636 a = 727.9602836879433 sum_pg = 0.9880213874226585

-Histograma:



-Tabelul 2. Frecvențele experimentale de apariție a impulsurilor datorate sursei radioactive pentru un număr (mediu) mare de impulsuri:

n	k_exp	nk_exp	Р	k_th_P	P_G	k_th_G
626	1	626	7.0935846e-317	0	1.17E-05	0.02
653	1	653	5.1638478323e-314	0	0.000311689	0.66
654	1	654	1.879538066473e-311	0	0.000345258	0.73
655	1	655	0.00E+00	0	0.000381917	0.81
657	3	1971	8.30E-307	0	0.000465405	0.98
660	1	660	1.21E-304	0	0.000619653	1.31
661	1	661	1.47E-302	0	0.000679822	1.44
663	2	1326	1.52E-300	0	0.000814887	1.72
664	1	664	1.39E-298	0	0.000890336	1.88
665	1	665	1.12E-296	0	0.000971435	2.05
666	2	1332	8.17E-295	0	0.001058466	2.24
667	2	1334	5.41E-293	0	0.001151712	2.44
668	3	2004	3.28E-291	0	0.001251451	2.65
669	2	1338	1.84E-289	0	0.001357961	2.87
670	2	1340	9.55E-288	0	0.001471513	3.11
671	4	2684	4.63E-286	0	0.001592372	3.37
672	1	672	2.11E-284	0	0.001720791	3.64
673	6	4038	9.03E-283	0	0.001857014	3.93
674	3	2022	3.65E-281	0	0.00200127	4.23
675	12	8100	1.40E-279	0	0.002153772	4.56
676	9	6084	5.09E-278	0	0.002314712	4.9
678	4	2712	1.77E-276	0	0.002662575	5.63
679	7	4753	5.84E-275	0	0.002849767	6.03
680	5	3400	1.85E-273	0	0.003045933	6.44
681	6	4086	5.61E-272	0	0.003251133	6.88
682	10	6820	1.63E-270	0	0.003465393	7.33
683	10	6830	4.57E-269	0	0.003688703	7.8
684	9	6156	1.23E-267	0	0.003921013	8.29
685	10	6850	3.20E-266	0	0.004162232	8.8
686	4	2744	8.04E-265	0	0.004412226	9.33
687	11	7557	1.95E-263	0	0.004670814	9.88
688	16	11008	4.58E-262	0	0.004937769	10.44
689	14	9646	1.04E-260	0	0.005212817	11.03
690	14	9660	2.30E-259	0	0.00549563	11.62
691	15	10365	4.92E-258	0	0.005785834	12.24
692	13	8996	1.02E-256	0	0.006083	12.87
693	8	5544	2.07E-255	0	0.00638665	13.51
694	7	4858	4.07E-254	0	0.006696252	14.16
695	18	12510	7.81E-253	0	0.007011225	14.83
696	18	12528	1.46E-251	0	0.007330936	15.5
697	18	12546	2.65E-250	0	0.007654703	16.19
698	16	11168	4.71E-249	0	0.007981797	16.88
699	23	16077	8.16E-248	0	0.008311443	17.58
700	20	14000	1.38E-246	0	0.008642822	18.28
701	20	14020	2.29E-245	0	0.008975076	18.98
702	21	14742	3.70E-244	0	0.009307308	19.68
703	21	14763	5.85E-243	0	0.009638589	20.39
704	15	10560	9.06E-242	0	0.009967959	21.08
705	19	13395	1.37E-240	0	0.010294433	21.77

707 24 16968 2.97E-238 0 0.010934654 23.13 708 24 16992 4.24E-237 0 0.011246347 23.79 709 30 21270 5.94E-236 0 0.011551045 24.43 710 26 18460 8.16E-235 0 0.011247713 25.06 711 28 19908 1.10E-233 0 0.012153318 25.67 712 29 20648 1.46E-232 0 0.012679283 26.82 713 28 19964 1.88E-231 0 0.012933664 27.35 715 30 21450 3.03E-229 0 0.013175037 27.87 716 28 20048 3.74E-228 0 0.013402491 28.35 717 31 22227 4.54E-227 0 0.01381209 29.21 718 37 26566 5.42E-226 0 0.01381209 29.21 719 33	700	00	10050	0.045.000	0	0.010017005	00.45
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727 19 13813 1.32E-216 0 0.014776826 31.25 728 25 18200 1.35E-215 0 0.014786172 31.27 729 38 27702 1.37E-214 0 0.014775213 31.25 730 33 24090 1.36E-213 0 0.014692646 31.07 731 27 19737 1.34E-212 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014530478 30.73 734 27 19818 1.18E-209 0 0.014291355 30.23 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014420322 30.5 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26	725	35	25375	1.20E-218	0	0.014697456	31.09
728 25 18200 1.35E-215 0 0.014786172 31.27 729 38 27702 1.37E-214 0 0.014775213 31.25 730 33 24090 1.36E-213 0 0.014692646 31.07 731 27 19737 1.34E-212 0 0.014692646 31.07 732 38 27816 1.30E-211 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014530478 30.73 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013797146 29.18 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26	726	27	19602	1.27E-217	0	0.014747213	31.19
729 38 27702 1.37E-214 0 0.014775213 31.25 730 33 24090 1.36E-213 0 0.014743995 31.18 731 27 19737 1.34E-212 0 0.014692646 31.07 732 38 27816 1.30E-211 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014530478 30.73 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013797146 29.18 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013384954 28.31 740 21	727	19	13813	1.32E-216	0	0.014776826	31.25
730 33 24090 1.36E-213 0 0.014743995 31.18 731 27 19737 1.34E-212 0 0.014692646 31.07 732 38 27816 1.30E-211 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014420322 30.5 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013384954 28.31 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34	728	25	18200	1.35E-215	0	0.014786172	31.27
731 27 19737 1.34E-212 0 0.014692646 31.07 732 38 27816 1.30E-211 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014420322 30.73 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013384954 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.012913921 27.31 743 34	729	38	27702	1.37E-214	0	0.014775213	31.25
732 38 27816 1.30E-211 0 0.014621376 30.92 733 40 29320 1.25E-210 0 0.014530478 30.73 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014420322 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22	730	33	24090	1.36E-213	0	0.014743995	31.18
733 40 29320 1.25E-210 0 0.014530478 30.73 734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.012913921 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22	731	27	19737	1.34E-212	0	0.014692646	31.07
734 27 19818 1.18E-209 0 0.014420322 30.5 735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.0123156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16	732	38	27816	1.30E-211	0	0.014621376	30.92
735 28 20580 1.10E-208 0 0.014291355 30.23 736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013797146 29.18 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.012913921 27.31 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.011824466 25.01 747 37	733	40	29320	1.25E-210	0	0.014530478	30.73
736 28 20608 1.01E-207 0 0.014144099 29.91 737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.013156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23	734	27	19818	1.18E-209	0	0.014420322	30.5
737 22 16214 9.22E-207 0 0.013979144 29.57 738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.013156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23	735	28	20580	1.10E-208	0	0.014291355	30.23
738 23 16974 8.29E-206 0 0.013797146 29.18 739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.012913921 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.010990626 23.07 750 24	736	28	20608	1.01E-207	0	0.014144099	29.91
739 26 19214 7.36E-205 0 0.013598824 28.76 740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.013156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010591549 22.4 751 22	737	22	16214	9.22E-207	0	0.013979144	29.57
740 21 15540 6.45E-204 0 0.013384954 28.31 741 34 25194 5.59E-203 0 0.013156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.01099626 23.07 750 24 18000 9.20E-195 0 0.01026863 21.72 752 14	738	23	16974	8.29E-206	0	0.013797146	29.18
741 34 25194 5.59E-203 0 0.013156361 27.83 742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.01099626 23.07 750 24 18000 9.20E-195 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21	739	26	19214	7.36E-205	0	0.013598824	28.76
742 26 19292 4.79E-202 0 0.012913921 27.31 743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21	740	21	15540	6.45E-204	0	0.013384954	28.31
743 34 25262 4.05E-201 0 0.012658547 26.77 744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.00928094 19.63 755 21	741	34	25194	5.59E-203	0	0.013156361	27.83
744 22 16368 3.39E-200 0 0.01239119 26.21 745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.00928094 19.63 754 14 10556 3.11E-191 0 0.008948673 18.93	742	26	19292	4.79E-202	0	0.012913921	27.31
745 16 11920 2.81E-199 0 0.012112828 25.62 746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	743	34	25262	4.05E-201	0	0.012658547	26.77
746 24 17904 2.29E-198 0 0.011824466 25.01 747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.008948673 18.93 755 21 15855 2.31E-190 0 0.008948673 18.93	744	22	16368	3.39E-200	0	0.01239119	26.21
747 37 27639 1.86E-197 0 0.011527122 24.38 748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.008948673 18.93 755 21 15855 2.31E-190 0 0.008948673 18.93	745	16	11920	2.81E-199	0	0.012112828	25.62
748 23 17204 1.48E-196 0 0.01122183 23.73 749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	746	24	17904	2.29E-198	0	0.011824466	25.01
749 22 16478 1.17E-195 0 0.010909626 23.07 750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	747	37	27639	1.86E-197	0	0.011527122	24.38
750 24 18000 9.20E-195 0 0.010591549 22.4 751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	748	23	17204	1.48E-196	0	0.01122183	23.73
751 22 16522 7.12E-194 0 0.01026863 21.72 752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	749	22	16478	1.17E-195	0	0.010909626	23.07
752 14 10528 5.46E-193 0 0.009941889 21.03 753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	750	24	18000	9.20E-195	0	0.010591549	22.4
753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	751	22	16522	7.12E-194	0	0.01026863	21.72
753 21 15813 4.14E-192 0 0.009612331 20.33 754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93	752	14	10528	5.46E-193	0	0.009941889	21.03
754 14 10556 3.11E-191 0 0.00928094 19.63 755 21 15855 2.31E-190 0 0.008948673 18.93		21		4.14E-192		0.009612331	
755 21 15855 2.31E-190 0 0.008948673 18.93			10556	3.11E-191	0	0.00928094	
					0	0.008948673	
	756	20	15120	1.70E-189	0	0.008616456	18.22

757	23	17411	1 225 100	0	0.000005104	17.52
757 758	23 9	6822	1.23E-188 8.90E-188	0	0.008285184	16.83
759	9	6831				
			6.35E-187	0	0.007628854	16.14
760	17	12920	4.49E-186	0	0.007305383	15.45
761	14	10654	3.14E-185	0	0.006986024	14.78
762	17	12954	2.18E-184	0	0.006671456	14.11
763	11	8393	1.50E-183	0	0.006362306	13.46
764	10	7640	1.02E-182	0	0.006059152	12.82
765	11	8415	6.86E-182	0	0.005762522	12.19
766	9	6894	4.58E-181	0	0.00547289	11.58
767	11	8437	3.03E-180	0	0.00519068	10.98
768	12	9216	1.99E-179	0	0.004916265	10.4
769	16	12304	1.29E-178	0	0.004649964	9.83
770	9	6930	8.33E-178	0	0.004392051	9.29
771	7	5397	5.32E-177	0	0.004142749	8.76
772	7	5404	3.37E-176	0	0.003902233	8.25
773	5	3865	2.11E-175	0	0.003670635	7.76
774	9	6966	1.31E-174	0	0.003448043	7.29
775	6	4650	8.11E-174	0	0.003234502	6.84
776	7	5432	4.96E-173	0	0.003030021	6.41
777	15	11655	3.01E-172	0	0.002834571	6
778	6	4668	1.81E-171	0	0.002648088	5.6
779	9	7011	1.08E-170	0	0.002470477	5.23
780	8	6240	6.39E-170	0	0.002301615	4.87
781	2	1562	3.75E-169	0	0.002141352	4.53
782	5	3910	2.19E-168	0	0.001989513	4.21
783	3	2349	1.26E-167	0	0.001845903	3.9
784	2	1568	7.24E-167	0	0.001710308	3.62
786	5	3930	4.12E-166	0	0.00146223	3.09
787	4	3148	2.32E-165	0	0.001349247	2.85
788	3	2364	1.30E-164	0	0.001243284	2.63
789	2	1578	7.23E-164	0	0.001144071	2.42
791	2	1582	3.99E-163	0	0.00096478	2.04
792	2	1584	2.18E-162	0	0.00088414	1.87
793	1	793	1.19E-161	0	0.000809128	1.71
794	2	1588	6.39E-161	0	0.000739464	1.56
795	1	795	3.42E-160	0	0.00067487	1.43
796	1	796	1.82E-159	0	0.000615073	1.3
797	3	2391	9.59E-159	0	0.000559804	1.18
799	1	799	5.02E-158	0	0.000461813	0.98
800	3	2400	2.61E-157	0	0.000418587	0.89
801	1	801	1.35E-156	0	0.000378887	0.8
802	3	2406	6.91E-156	0	0.000342481	0.72
803	1	803	3.52E-155	0	0.000309148	0.65
804	1	804	1.78E-154	0	0.000278677	0.59
805	1	805	8.93E-154	0	0.000270077	0.53
809	1	809	4.45E-153	0	0.000162488	0.34
812	1	812	2.20E-152	0	0.000102486	0.24
813	1	813	1.08E-151	0	0.000113030	0.24
815	1	815	5.30E-151	0	8.13E-05	0.22
OTO	Т	010	J.JUL-1J1	U	0. 13L-03	0.1/