$$L_1(Z) = \sum_{i,j=1}^{n} \ln(1 + |X_i - Y_j|), \quad (1)$$

$$L_2(Z) = \sum_{i,j=1}^{n} \ln(1 + |X_i - Y_j|^2), \quad (2)$$

$$L_\infty(Z) = \sum_{i,j=1}^{n} \ln(|X_i - Y_j|), \quad (3)$$

$$LL_{distribution} = \text{maximum log likelyhood permutation criterion based on the distribution} \quad (4)$$

Таблица 1: Мощность тестов для Нормального распределения, размер выборок $n = 50$, 1000 итераций, 800 перестановок в каждой итерации

F_2	L_1	L_2	L_∞	LL_{norm}	LL_{cauchy}	$LL_{laplace}$	LL_{levy}	wilcox.test	ks.test
N(0, 1)	5.2	5.4	4.5	5.2	5.6	5.8	4.9	5.4	4.3
N(0.25, 1)	19.4	21.8	15	19.5	15.6	17.5	5	23.4	16.5
N(0.5, 1)	62.7	66.5	50.6	62.3	49.1	53.5	6.7	70	53.2
N(0.75, 1)	93.9	95.2	86.7	93.7	83.9	89.6	7.5	96.5	90.1
N(1, 1)	98.9	99.1	98.4	98.9	97.5	98.5	9	99.4	98.7
N(0, 1.5)	35.7	33.2	33.8	69.9	20.8	39.3	14.6	5.5	11.2
N(0, 2)	89.5	89.9	84.3	99.1	68.8	91.4	26.2	5.9	37
N(0, 2.5)	99.3	99.4	97.7	100	93.6	99.8	34.2	6.3	69
N(0, 3)	100	100	100	100	99.3	100	41.4	6.8	89.2
N(0.25, 1.25)	24.5	25.3	20.2	38.6	19.2	26.1	7.6	18.9	16.5
N(0.5, 1.5)	74.2	75.4	63.7	89.2	51.8	71.8	10.7	48.2	54.2
N(0.75, 1.75)	95.9	96.3	91.8	98.9	86	95.4	13.2	73	84.1
N(1, 2)	99.5	99.6	98.2	100	95.9	99.3	16.1	86.7	96
N(0.25, 1.5)	47	46.5	41.2	76.1	32	49.5	12.3	17.1	23.2
N(0.5, 2)	95	95.8	91.1	99.6	82.3	95.8	21.8	34.7	68.1
N(0.75, 2.5)	99.8	99.9	98.7	100	96.8	99.8	29.9	49.5	91.1
N(1, 3)	100	100	100	100	99.7	100	35.8	58.1	98.2

Таблица 2: Мощность тестов для распределения Коши, размер выборок $n = 50$, 1000 итераций, 800 перестановок в каждой итерации

F_2	L_1	L_2	L_∞	LL_{norm}	LL_{cauchy}	$LL_{laplace}$	LL_{levy}	wilcox.test	ks.test
C(0, 1)	5	5	5.1	5.4	4.9	5.1	4.5	5	4.3
C(0.25, 1)	10.7	10.5	10.7	5.5	11.3	5.9	4.4	10.9	10.3
C(0.5, 1)	28.4	26.7	27.6	5.5	30	7.5	4.4	28.9	30
C(0.75, 1)	56	53.7	55.6	5.8	61.1	10.1	4	52.2	57.1
C(1, 1)	80.7	79.6	80.6	6.3	85.3	14.6	4.5	74.6	79.9
C(0, 1.5)	22.7	21.7	22.2	11.2	22.9	13.9	6	5.5	9.8
C(0, 2)	54.7	53	53.7	18.8	60.5	28.1	7.9	6	19.6
C(0, 2.5)	80.6	79.8	79.9	24.7	84.7	40.9	10.1	6.4	31.8
C(0, 3)	92.2	92.3	91.8	32.8	95.2	52.5	11.4	6.6	49.4
C(0.25, 1.25)	15	13.9	14	6.9	15.4	9	4.8	9.5	10.8
C(0.5, 1.5)	38.1	38.8	36.9	11.3	42.4	15.5	5.6	20.9	27.2
C(0.75, 1.75)	64.6	63.8	63.5	15.7	70.3	23.6	6.8	33.5	48.1
C(1, 2)	83.3	82	82.2	19.2	86.9	32.4	7.7	45.5	66.2
C(0.25, 1.5)	26.4	25.3	26.5	11.4	29	14.7	5.8	9	12.8
C(0.5, 2)	64.6	64.6	63.2	19.1	70.9	29.1	7.3	16.8	34.3
C(0.75, 2.5)	87.2	86.2	86.2	25.2	90	43.2	10.1	23.9	57.3
C(1, 3)	96.7	96.8	96.1	33.5	97.1	55.3	11.6	30	72.3

Таблица 3: Мощность тестов для распределения Лапласа, размер выборок $n = 50$, 10000 итераций, 1600 перестановок в каждой итерации

F_2	L_1	L_2	L_∞	LL_{norm}	LL_{cauchy}	$LL_{laplace}$	LL_{levy}	wilcox.test	ks.test
La(0, 1)	5.5	5.6	5.1	5	5	5.2	5	5.5	4.1
La(0.25, 1)	18	17.8	16.3	9.3	18.8	17.2	5.1	19.1	17.2
La(0.5, 1)	54.6	53.6	49.9	23.7	56.8	53.6	5.4	55.3	54.1
La(0.75, 1)	87	86.7	83	51.3	87.8	86.6	5.8	87.3	86.3
La(1, 1)	98.3	98.2	97.1	78.8	98.3	98.2	5.8	98	98.1
La(0, 1.5)	28.1	28	25.3	44.3	24.8	41.8	10	5.7	9.4
La(0, 2)	72.1	72.8	65.6	87.5	64.2	87.2	17	5.9	22.8
La(0, 2.5)	94	94.5	90.4	98.4	89.4	98.6	23.6	6.3	41.9
La(0, 3)	99.1	99.2	97.8	99.8	97.3	99.9	28.6	6.5	61.4
La(0.25, 1.25)	22.2	21.8	20.3	21.1	22.1	26.1	6.4	16.3	16.5
La(0.5, 1.5)	61	60.6	56.2	56	59.6	69.6	8.8	39.6	45.7
La(0.75, 1.75)	88.2	88.3	84.4	83.9	86.6	92.9	11.1	61.9	73.4
La(1, 2)	97.7	97.8	96.3	95.6	96.6	98.9	13.5	78.2	89.8
La(0.25, 1.5)	37.8	37.7	34	47.3	34.4	49.9	9.5	14.2	19.2
La(0.5, 2)	84.4	84.8	80.2	90.3	80	93	15.3	30	51.5
La(0.75, 2.5)	98.3	98.5	96.9	99	96.6	99.7	20.8	43.9	77.3
La(1, 3)	99.9	99.9	99.7	99.9	99.6	100	25.7	54.5	91.6

Таблица 4: Мощность тестов для распределения Леви, размер выборок $n = 50$, 1000 итераций, 800 перестановок в каждой итерации

F_2	L_1	L_2	L_∞	LL_{norm}	LL_{cauchy}	$LL_{laplace}$	LL_{levy}	wilcox.test	ks.test
Le(0, 1)	5.5	5.7	5.8	5.6	5.8	5.6	5.8	4.6	4.7
Le(0.25, 1)	7.1	6.9	13.8	5.6	6.1	5.5	31.6	10.1	8.5
Le(0.5, 1)	16.2	10.8	45.9	5.6	10.7	5.5	62.6	22.7	36.8
Le(0.75, 1)	41	27.8	81.8	5.6	23.3	5.7	79.7	38.7	74.5
Le(1, 1)	69.3	53.2	94.9	5.6	43.8	5.7	89.5	51.9	92.3
Le(0, 1.5)	13.4	12.7	15.6	6.9	14.3	6.7	7.9	20.5	13.4
Le(0, 2)	32.9	31.5	40.7	7.3	35	8.9	11.9	48.2	37.9
Le(0, 2.5)	54.3	52.3	64.3	8.5	53.4	10.4	17.3	69.5	61.1
Le(0, 3)	71.8	69.7	81.1	9.5	70.8	12.2	22.8	84.3	77.9
Le(0.25, 1.25)	12.8	11.2	22.3	6.7	11.2	5.7	28.8	22.4	17.7
Le(0.5, 1.5)	37.6	32.1	67.6	6.8	30.6	6.8	52.1	54.6	64
Le(0.75, 1.75)	72.3	64.8	92.6	6.9	52.2	7.6	63.6	75.1	90.2
Le(1, 2)	90	85.4	97.9	7.3	73.4	8.9	72.6	89.2	97.3
Le(0.25, 1.5)	21.3	19.5	35.4	6.9	20.7	6.8	27.8	37.4	30.8
Le(0.5, 2)	63.7	57.4	84.7	7.3	50.2	8.9	48.5	73.8	82
Le(0.75, 2.5)	89.2	86.6	97.2	8.5	77.4	10.6	59.1	92	96.3
Le(1, 3)	97.4	96.8	99.5	9.5	88.9	12.6	67.8	96.7	99.4

Таблица 5: Мощность тестов для распределения Лог-Коши, размер выборок $n = 50$, 1000 итераций, 800 перестановок в каждой итерации

F_2	L_1	L_2	L_∞	LL_{norm}	LL_{cauchy}	$LL_{laplace}$	LL_{levy}	$LL_{logcauchy}$	wilcox.test	ks.test
LC(0, 1)	6.7	6.4	6.9	4.4	6	4.6	4.2	5.8	4.8	4.5
LC(0.25, 1)	9.4	9.2	8.9	4.7	12.3	4.9	6.6	11.7	8.6	9.8
LC(0.5, 1)	21.4	20.6	24	4.9	38.3	5.8	12	32.7	27.6	30
LC(0.75, 1)	42.4	41.6	48.2	5.8	68	6.5	23.2	63.1	53	58.5
LC(1, 1)	66.6	65.6	72.4	6.1	88	7.2	34	85.7	75	80.7
LC(0, 1.5)	15.2	14.2	17.3	8.7	11.9	9.2	6.6	24.9	5.1	9.5
LC(0, 2)	30.4	28.3	39.8	15.1	21.2	16.1	13.6	58.6	5.1	20.6
LC(0, 2.5)	45.7	42.3	61	19.9	33.6	21	22	84.2	5.7	32.4
LC(0, 3)	57.8	54.7	77.6	24.1	43.5	26	34	92.6	5.7	47.1
LC(0.25, 1.25)	12.9	13.3	11.3	6.8	12.9	7.1	4.4	16.1	7.9	10.6
LC(0.5, 1.5)	28.1	28.2	29.4	10.2	34	10.9	6.5	44.1	19.2	26.2
LC(0.75, 1.75)	47.6	47.7	48.7	13.8	56.6	15.4	8.3	68.9	32.4	47.9
LC(1, 2)	64	64.2	66.3	18.3	72.9	19.9	10.6	86.4	44.4	67
LC(0.25, 1.5)	19.7	18.9	18.9	9.2	16.1	10.5	5.1	28.9	7.7	12.9
LC(0.5, 2)	41.8	41.3	47	16.4	39.9	17.7	8.3	69.9	14.6	33.4
LC(0.75, 2.5)	63.8	62.9	70.6	21.9	57.8	23.1	13.7	90.5	22.1	56.1
LC(1, 3)	78.4	77.4	84.8	27.2	70.8	28.1	19.2	97.1	27.4	71.9