Санкт-Петербургский политехнический университет Петра Великого Физико-механический институт Высшая школа прикладной математики и вычислительной физики

Отчёт
по лабораторным работам №5
по дисциплине
«Математическая статистика»

Выполнил студент:
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5030102/10201
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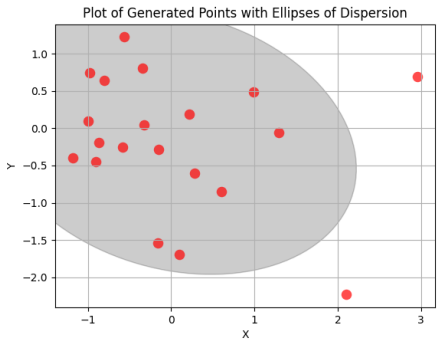
Санкт-Петербург

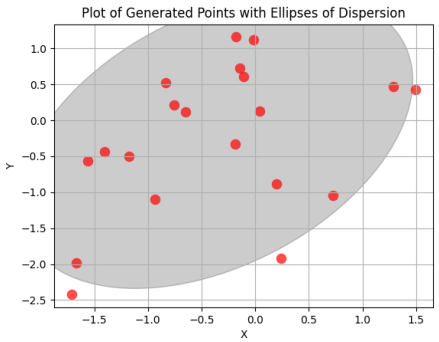
1 Графики

1.1 Нормальное распределение выборка 20



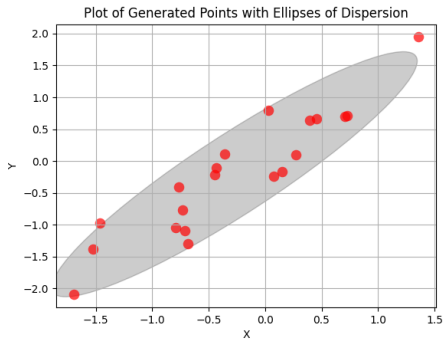
ρ = 0

mean:
    pearson: -0.003632
    spearman: -0.001427
    quadrant: 0.24965
mean square:
    pearson: 0.051583
    spearman: 0.051291
    quadrant: 0.067693
variance:
    pearson: 0.05157
    spearman: 0.051289
    quadrant: 0.005367



ρ = 0.5

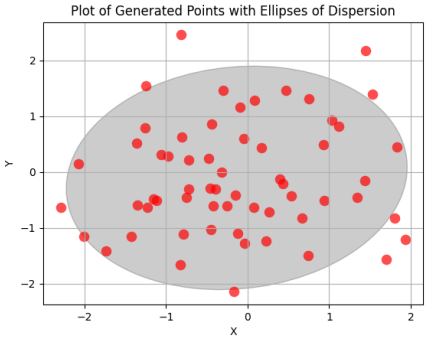
mean:
    pearson: 0.484857
    spearman: 0.449146
    quadrant: 0.33195
mean square:
    pearson: 0.26472
    spearman: 0.235238
    quadrant: 0.115098
variance:
    pearson: 0.029634
    spearman: 0.033506
    quadrant: 0.004907



ρ = 0.9

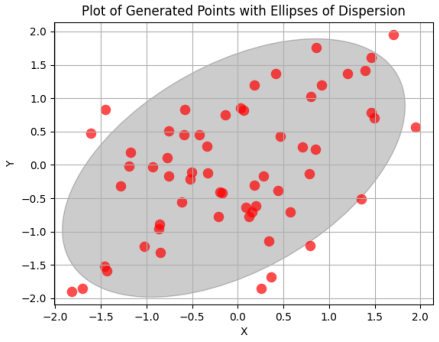
mean:
    pearson: 0.895924
    spearman: 0.865934
    quadrant: 0.43085
mean square:
    pearson: 0.805089
    spearman: 0.754686
    quadrant: 0.190603
variance:
    pearson: 0.00241
    spearman: 0.004845
    quadrant: 0.004971

1.2 Нормальное распределение выборка 60



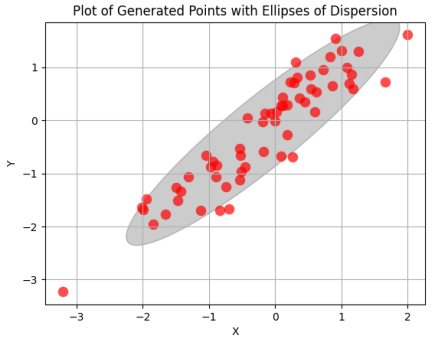
ρ = 0

mean:
    pearson: 0.007866
    spearman: 0.007409
    quadrant: 0.251617
mean square:
    pearson: 0.016391
    spearman: 0.016891
    quadrant: 0.065106
variance:
    pearson: 0.016329
    spearman: 0.016836
    quadrant: 0.001795



ρ = 0.5

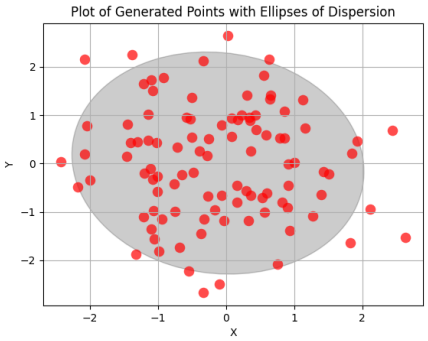
mean:
    pearson: 0.498591
    spearman: 0.479156
    quadrant: 0.3338
mean square:
    pearson: 0.258045
    spearman: 0.240227
    quadrant: 0.113071
variance:
    pearson: 0.009451
    spearman: 0.010636
    quadrant: 0.001649



ρ = 0.9

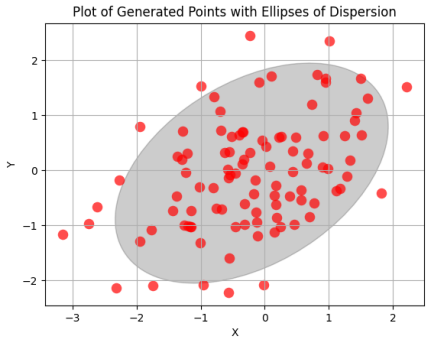
mean:
    pearson: 0.897508
    spearman: 0.881108
    quadrant: 0.426767
mean square:
    pearson: 0.806169
    spearman: 0.777515
    quadrant: 0.183676
variance:
    pearson: 0.000648
    spearman: 0.001164
    quadrant: 0.001546

1.3 Нормальное распределение выборка 100



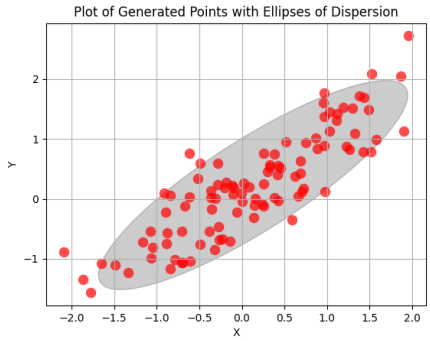
ρ = 0

mean:
    pearson: 0.003951
    spearman: 0.003704
    quadrant: 0.25088
mean square:
    pearson: 0.010635
    spearman: 0.010941
    quadrant: 0.064047
variance:
    pearson: 0.010619
    spearman: 0.010928
    quadrant: 0.001106



ρ = 0.5

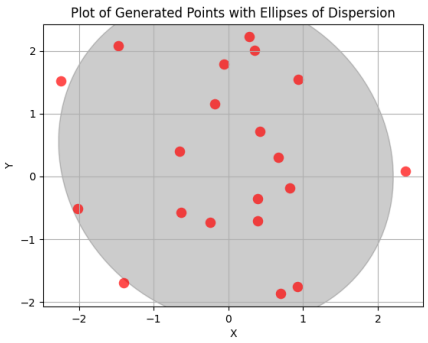
mean:
    pearson: 0.498584
    spearman: 0.479436
    quadrant: 0.33436
mean square:
    pearson: 0.236173
    spearman: 0.236173
    quadrant: 0.112819
variance:
    pearson: 0.005635
    spearman: 0.006314
    quadrant: 0.001022



ρ = 0.9

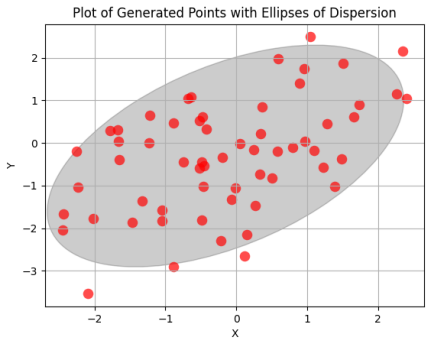
mean:
    pearson: 0.899356
    spearman: 0.886931
    quadrant: 0.42872
mean square:
    pearson: 0.809238
    spearman: 0.184687
    quadrant: 0.184687
variance:
    pearson: 0.000398
    spearman: 0.000625
    quadrant: 0.000886

1.4 Смешанное распределение f(x, y) = 0.9N(x,y,0,0,1,10.9) + 0.1N(x,y,0,0,10,10,-0.9)



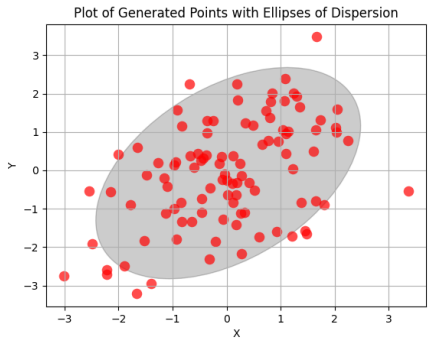
size = 20

mean:
    pearson: 0.343782
    spearman: 0.325947
    quadrant: 0.309800
mean square:
    pearson: 0.159329
    spearman: 0.148703
    quadrant: 0.101345
variance:
    pearson: 0.041143
    spearman: 0.042462
    quadrant: 0.005369



size = 60

mean:
    pearson: 0.358987
    spearman: 0.339783
    quadrant: 0.307767
mean square:
    pearson: 0.142658
    spearman: 0.129829
    quadrant: 0.096448
variance:
    pearson: 0.013786
    spearman: 0.014376
    quadrant: 0.001728



size = 100

mean:
    pearson: 0.367462
    spearman: 0.352392
    quadrant: 0.31016
mean square:
    pearson: 0.142802
    spearman: 0.132416
    quadrant: 0.09729
variance:
    pearson: 0.007774
    spearman: 0.008237
    quadrant: 0.001091

2 GitHub

https://github.com/11AgReS1SoR11/MatStat/tree/main/Laba5