Worksheet 3

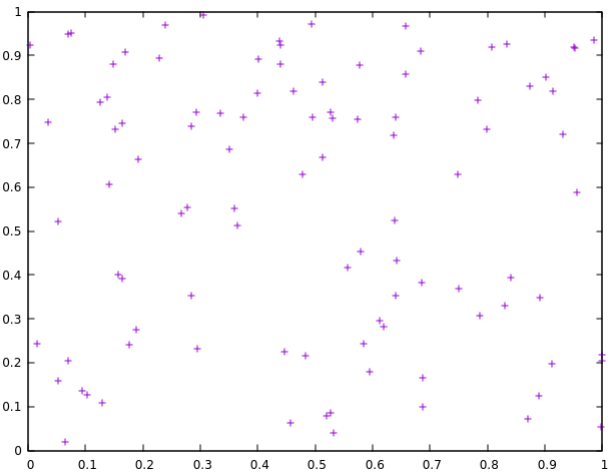
Practical Lab Numerical Computing

Andrii Lischishin Lars Schleithoff Hendrik Kleikamp

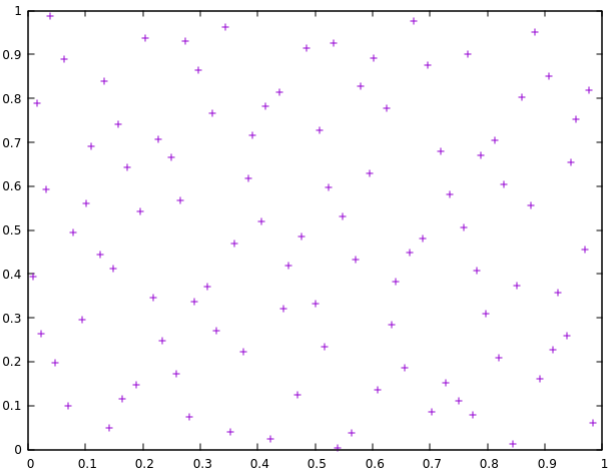
June 13, 2017

Task 7

Uniform random numbers in $(0, 1)^2$:



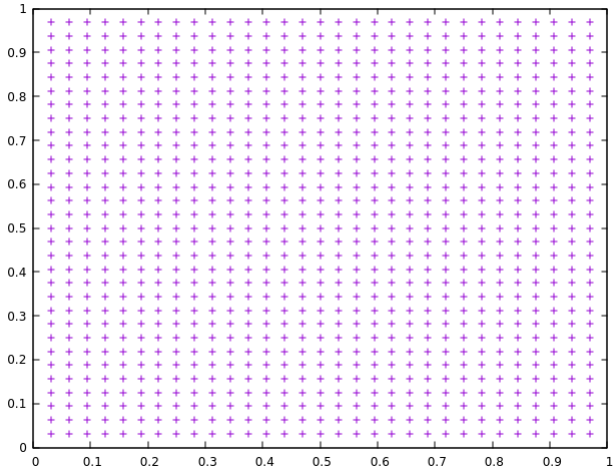
Halton sequence:



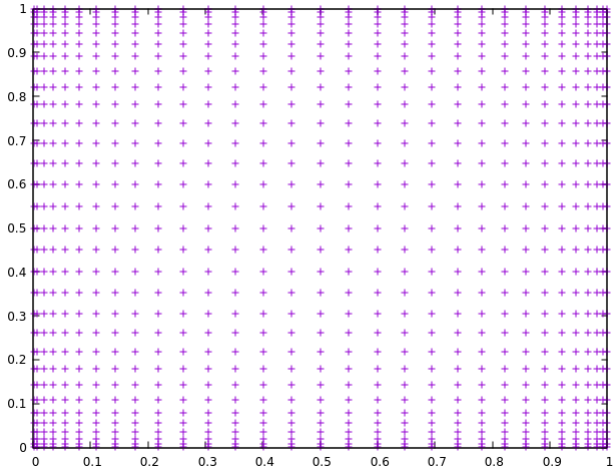
One can see that there are some regions in $(0,1)^2$ where no uniform random numbers are set. This is not the case in the point set calculated by the Halton sequence. The Hatlon sequence gives a very uniform spread set without any holes.

Task 9

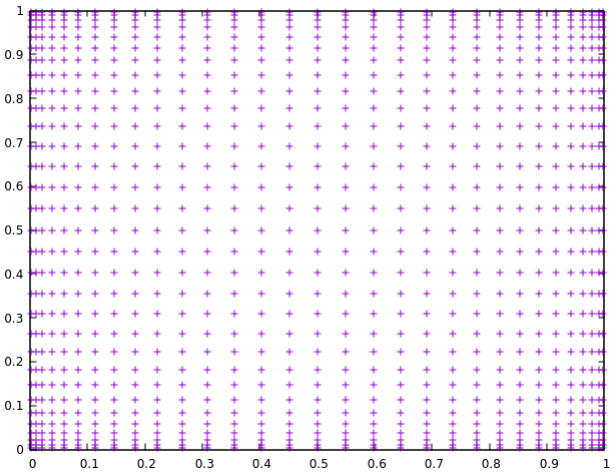
Quadrature nodes of the two-dimensional product rule for trapezoidal rule:



Quadrature nodes of the two-dimensional product rule for Gauss-Legendre:

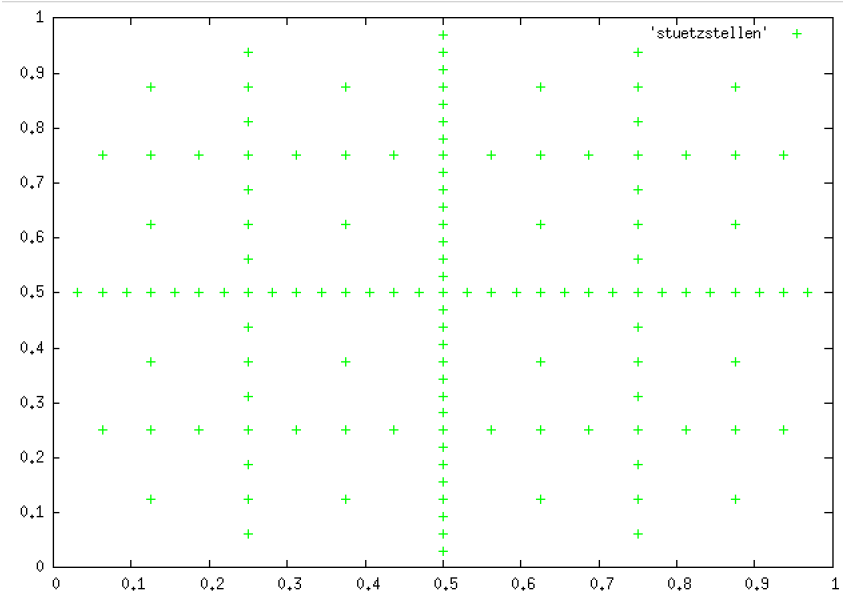


Quadrature nodes of the two-dimensional product rule for Clenshaw Curtis:

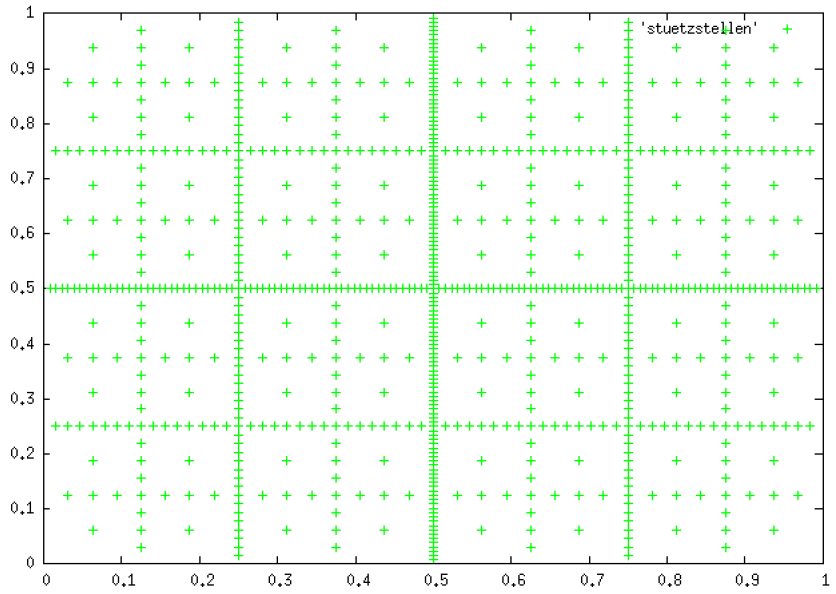


Task 11

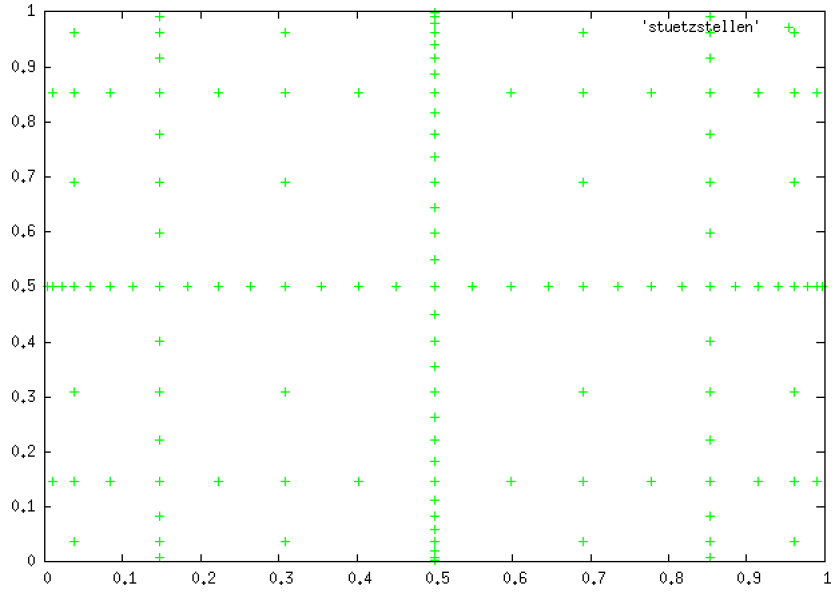
Two-dimensional Sparse Grid using Trapeziodal Rule for $l = 5$:



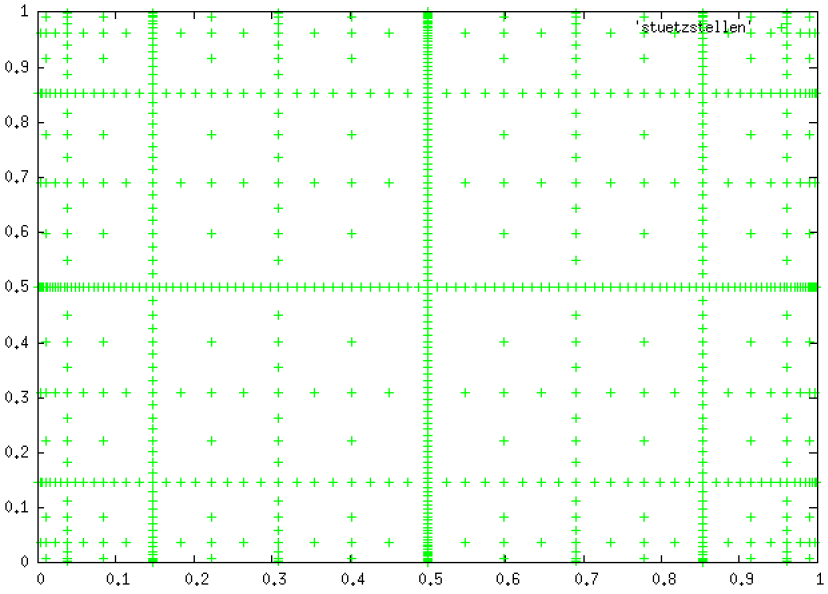
Two-dimensional Sparse Grid using Trapezoidal Rule for $l = 7$:



Two-dimensional Sparse Grid using Clenshaw-Curtis Quadrature Rule for $l = 5$:



Two-dimensional Sparse Grid using Clenshaw-Curtis Quadrature Rule for $l = 7$:


'stuetzstellen'
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1