**NANA BOATENG**

**SIMULATION AND COMPUTING**

**IMPLEMENTATION OF THE BOX-MULLER ALGORITHM**

**SUMMARY OF OUTPUT WITH GRAPHS**

Two uniform U(0,1) sequences are generated from an LCG method with different initial points but the same multiplier ,increment and size.These two uniform sequences are the used in the Box-Muller algorithm to generate x and y.From the graphs it is clear the nature of the standard normal distribution generated greatly depends of the choice of LCG sequence used in generating x and y.In thye various LCG’s used I found out the LCG sequence with increment c=0,a=16807 and m=2^31-1 performed considerably better than the others.The worst perfomance was from the LCG sequence with m=2048,a=1229 and c=1.It’s graph looked much normal with no observable clear pattern.Each of the different LCG sequences used produced different graphs confirming the fact that normality in the Box-Muller algorithm greatly rest on the particular LCG sequence chosen.The Polar Method was computationally faster to generate because unlike the Box-Muller,there were no computations of trigonometric functions sine and cosine involved in the Box-Muller method which are comparatively expensive in many computing environments. The polar method differs from the basic method in that it is a type of rejection sampling.







**THE POLAR METHOD**





