function S = gen\_scheme\_exp(L,P) % matched exponential distribution for tmax=1.26R2 L - length of the generated sparse vector, P - percentage of "1" in the vector

nr = int32(L\*P\*0.01);

nus = zeros(1,L);

dint=(1.0-exp(-1.26))/double(nr);

mini=0.0;

gen=0;

run="ok";

dint=(1.0-exp(-1.26))/double(nr);

k=1;

while (k<=nr)

gen++;

maxi=-log(1.0-k\*dint)\*(L-1)/1.26;

if (gen > 1 && run=="ok")

run="no";

endif

relax=0;

while ( gen > 0 && relax < 20)

relax++;

X = int32(unifrnd(mini,maxi));

if (nus(X+1) == 0)

nus(X+1) = 1;

gen--;

relax=0;

endif

endwhile

mini=maxi;

k++;

endwhile

if(sum(nus) < nr)

n=1;

while ( gen > 0 && n<=nr )

if(nus(n) == 0)

nus(n) = 1;

gen--;

endif

n++;

endwhile

endif

S=nus;