

```

function [ Pservice_ob_t ] = Pserveth(lam,P,F,bf,zf,alpha,Mt,Ns,BW)
%Pserveth(lam,bf,zf,alpha,Mt,Ns,BW,ob):
%
%considers exponential distribution
%for object lifespan with mean Mt, and takes as arguments the
specific
%object catalog with size vector zf
%object placement vector bf
%node density lam
%path-loss exponent alpha
%transmitted signal power P
%(F), catalog size
%noise power W/Hz Ns
%bandwidth BW
%and object of interest ob
%
%It returns the theoretical value of service probability for object
ob
%
% Author: Anastasios Giovanidis,
% CNRS CR2, LTCI - Telecom ParisTech, Paris,
% January 2016.
%
% First an integration to get the I
for ob = 1:F
    zz = zf(ob);
    Funy = @(t)((exp(zz./t/BW)-1).^(-2/alpha).*(1/Mt).*exp(-t/
Mt));
    IF(ob) = quadgk(Funy,0,Inf);
    clear Funy
end
%
Pservice_ob_t=1-exp(-pi*lam*bf*(P)^(2/alpha)*gamma(1+2/alpha).*IF/
(Ns*BW)^(2/alpha));
end

```