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%Materia_activa.m
clc
close all
clear all

%Datos
nul=2;
L=7;

Ttotal=20;
Nm=300;

%Secuencia

a=[-1:2/(Nm-1):1]';
xi=a.*randn(Nm,1);
yi=a.*randn(Nm,1);
figure (1)
plot(xi,yi,'b. ')

for i=1:Ttotal-1

angulos1=atan(yi(:,i)./xi(:,i));

deltathetal=randn(Nm,1)*nul/2;

thetar1(1:Nm,1)=atan(mean(sin(angulos1))/mean(cos(angulos1)));

thetamas1=thetar1+deltathetal;

velocidadx1(1:Nm,i)=.003*cos(thetamas1);
velocidady1(1:Nm,i)=.003*sin(thetamas1);

xi(:,i+1)=xi(:,i)+velocidadx1(:,i);
yi(:,i+1)=yi(:,i)+velocidady1(:,i);

end
figure (2)
plot(xi,yi,'b. ')
```