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function finite_difference_romain
% finite difference to solve Fisher's Equation
dx = 0.01; %step size
dt = (dx)^2/4; %dt must be smaller than dx^2/2D

xmax = 5; %upper boundary
xmin = -5; %lower boundary
x = xmin:dx:xmax; %positions of nodes
x_blob = -0.1:dx:0.1;
N_blob = length(x_blob);

Grid_T = 1000; % number of grid positions t axis
N_x = length(x); % number of grid postitions x axis
IC = 1;

u = zeros(N_x,Grid_T); % starting grid


%setting the initial condition for the blobs
for k = 1:N_x
    for l = 1:N_blob
        if (x(k) - x_blob(l) < dx/2) &&(x(k) - x_blob(l) > -dx/2)
            u(k,1) = IC;
        end
    end
end



for j=2:Grid_T
    for i = 2:N_x-1 %loop through the values of x excluding the edge
        birth = dt * (u(i,j-1) * (1 - u(i,j-1)));
        diffusion = (dt * u(i+1,j-1) + 2*u(i,j-1) + u(i-1,j-1))/dx^2;
        u(i,j) = u(i,j-1) + birth + diffusion; %FDM
    end
    %no flux condition
    u(1,j) = u(2,j);
    u(Grid_T,j) = u(Grid_T-1,j);

plot(x,u(:,j))
set(gca,'xlim',[xmin,xmax],'ylim',[0,xmax])
pause(0.05)
end
%It's not working the graph is flat, I'm trying to figure out what the
%problem is
```