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Editor - /Users/simon/\_work/Teaching/2016\_06\_EMBL\_BIAS/BIAS2016\_MATLAB/mFiles/functions/fun\_msd\_at\_tau.m

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function msd\_tau = fun\_msd\_at\_tau(x,y,tau)

% fun\_msd\_vs\_tau FUNCTION

% GIVEN INPUT DATA 'X', 'Y' THIS FUNCTION RETURNS THE

% MEAN-SQUARED-DISPLACEMENT CALCULATED IN OVERLAPPING WINDOWS

% FOR THE FIXED TIMELAG VALUE 'tau'

% NB: THIS IS FOR A SINGLE TIMELAG ONLY BUT AVERAGED OVER THE ENTIRE TRACK

% 2016-06-03, sfn, created

%% --- INITIALIZE ---

N = length( x ); % number of postions determined

dr2 = zeros( 1, N - tau ); % initialize and speed up procedure

%% --- CALCULATE THE MSD AT A SINGLE TIMELAG ---

for t = 1 : N - tau

dx2 = ( x( t + tau ) - x( t ) ).^2; % squared x-displacement

dy2 = ( y( t + tau ) - y( t ) ).^2; % squared y-displacement

dr2( t ) = dx2 + dy2; % store the squared x-y-displacement for each postion

end

Script-editor

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