signal\_and\_system\_HW\_2\_9

Code:

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| --- |
| close all;  clear all;  % Cell center coordinates  number\_of\_cell = 7;  BS\_BS\_distance\_km = 0.8; % Km  % Location of BS in each cell  BS\_horizontal = BS\_BS\_distance\_km;  BS\_vertical = BS\_BS\_distance\_km \* sin(pi/3);  cell\_center\_x = [0 BS\_horizontal BS\_horizontal/2 BS\_horizontal/2 (-1\*BS\_horizontal/2) ...  (-1\*BS\_horizontal/2) (-1\*BS\_horizontal)];  cell\_center\_y = [0 0 BS\_vertical (-1\*BS\_vertical) BS\_vertical (-1\*BS\_vertical) 0];  cell\_center = [cell\_center\_x; cell\_center\_y]; % center cell coordinate is cell\_center(1)  % Center hexagon vertices  theta = (2\*pi/6)/2;  R = (BS\_BS\_distance\_km/2)/cos(theta);  center\_cell\_x = cell\_center\_x(1);  center\_cell\_y = cell\_center\_y(1);  vertex\_x = R \* cos((0:5)\*pi/3+pi/6) + center\_cell\_x;  vertex\_y = R \* sin((0:5)\*pi/3+pi/6) + center\_cell\_y;  vertex = [vertex\_x ; vertex\_y];  % Plotting  figure(4);  plot(cell\_center\_x, cell\_center\_y, 'r\*');  hold on;  grid on;  text(cell\_center\_x(1), cell\_center\_y(1)+0.05,'B\_1');  text(cell\_center\_x(2), cell\_center\_y(2)+0.05,'B\_2');  text(cell\_center\_x(3), cell\_center\_y(3)+0.05,'B\_3');  text(cell\_center\_x(4), cell\_center\_y(4)+0.05,'B\_4');  text(cell\_center\_x(5), cell\_center\_y(5)+0.05,'B\_5');  text(cell\_center\_x(6), cell\_center\_y(6)+0.05,'B\_6');  text(cell\_center\_x(7), cell\_center\_y(7)+0.05,'B\_7');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,1),[vertex(2,:) vertex(2,1)]+cell\_center(2,1),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,2),[vertex(2,:) vertex(2,1)]+cell\_center(2,2),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,3),[vertex(2,:) vertex(2,1)]+cell\_center(2,3),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,4),[vertex(2,:) vertex(2,1)]+cell\_center(2,4),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,5),[vertex(2,:) vertex(2,1)]+cell\_center(2,5),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,6),[vertex(2,:) vertex(2,1)]+cell\_center(2,6),'k.-');  plot([vertex(1,:) vertex(1,1)]+cell\_center(1,7),[vertex(2,:) vertex(2,1)]+cell\_center(2,7),'k.-');  title('Cellular Network');  axis([-1.3 1.3 -1.3 1.3]);  xlabel('x-axis (Km)');  ylabel('y-axis (Km)'); |

Figure:

