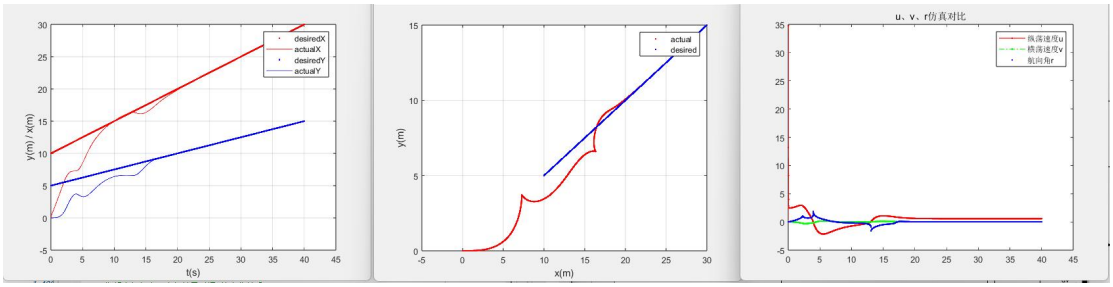
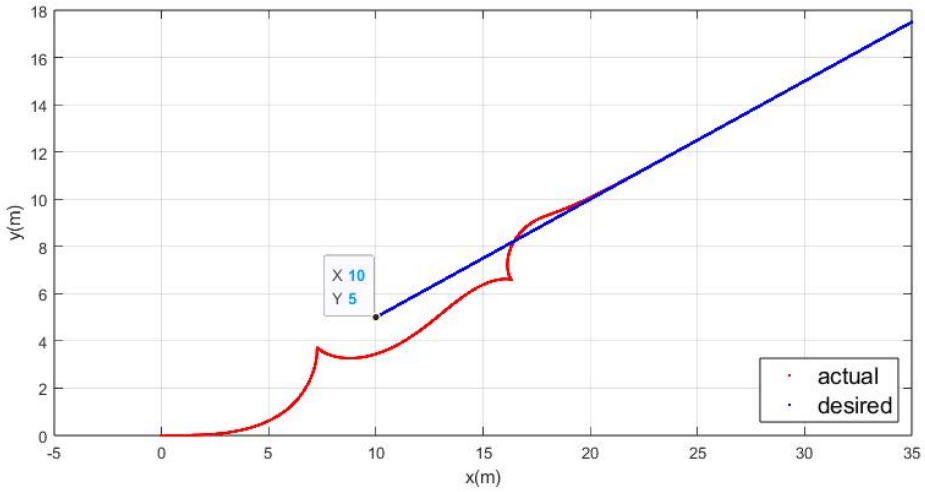
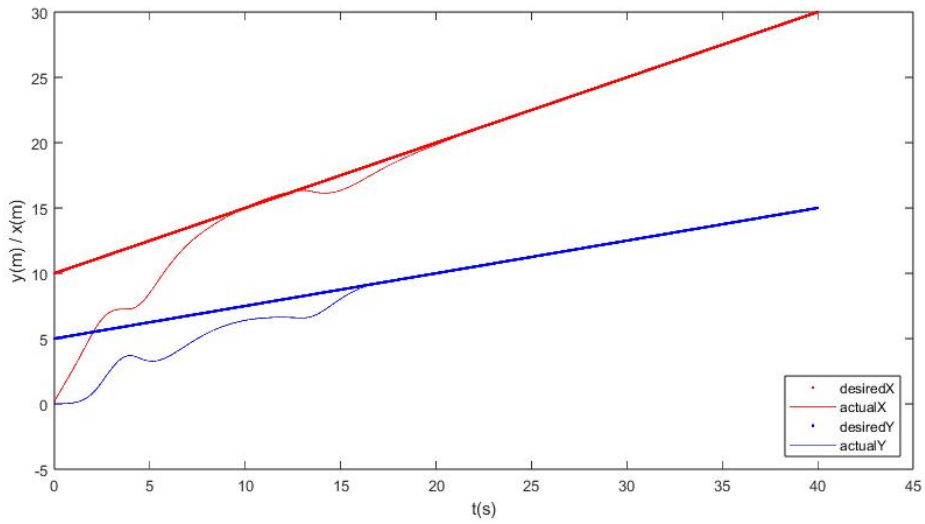
一、实际坐标 (xa,ya) 跟踪期望坐标（xd,yd）仿真效果下图：

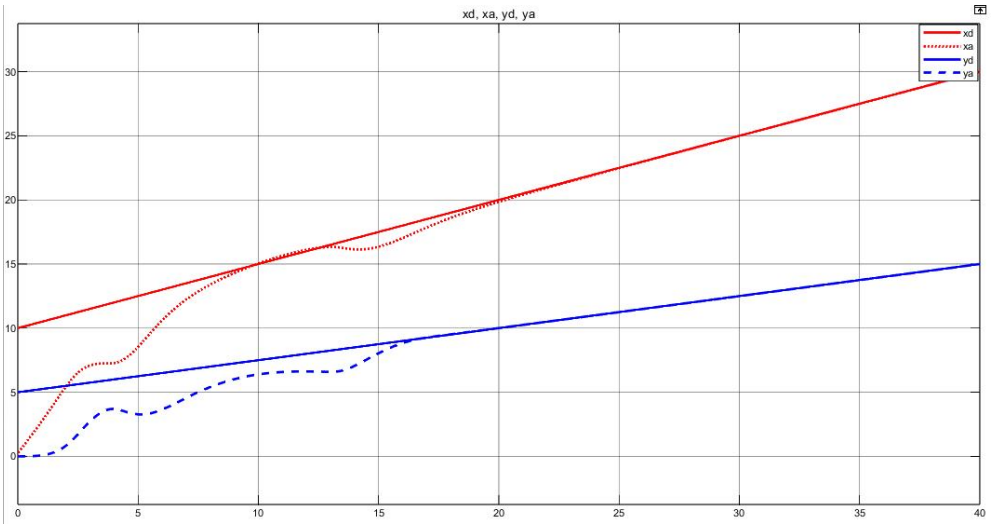
xd = 0.5*t+ 1*m;　　yd = 0.25*t+0.5*m;　　m = 10;



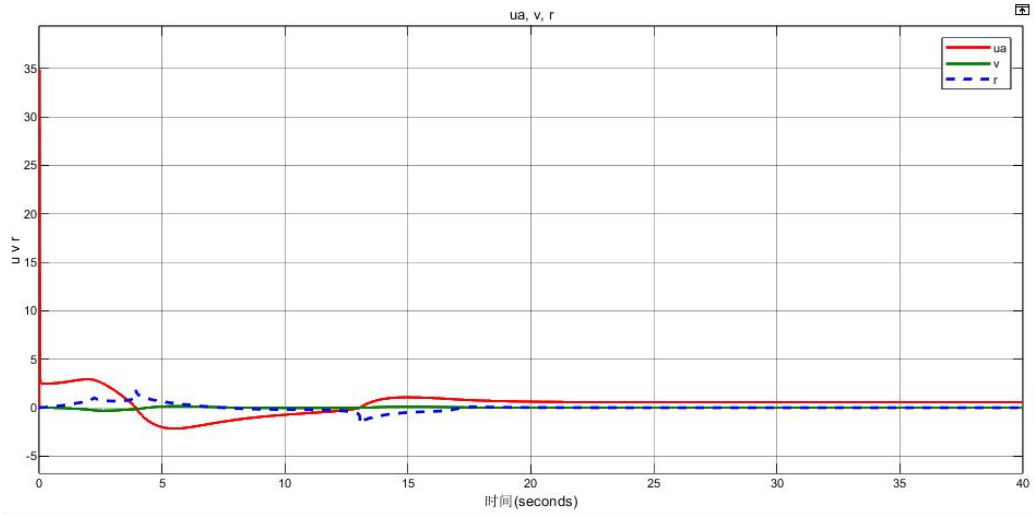


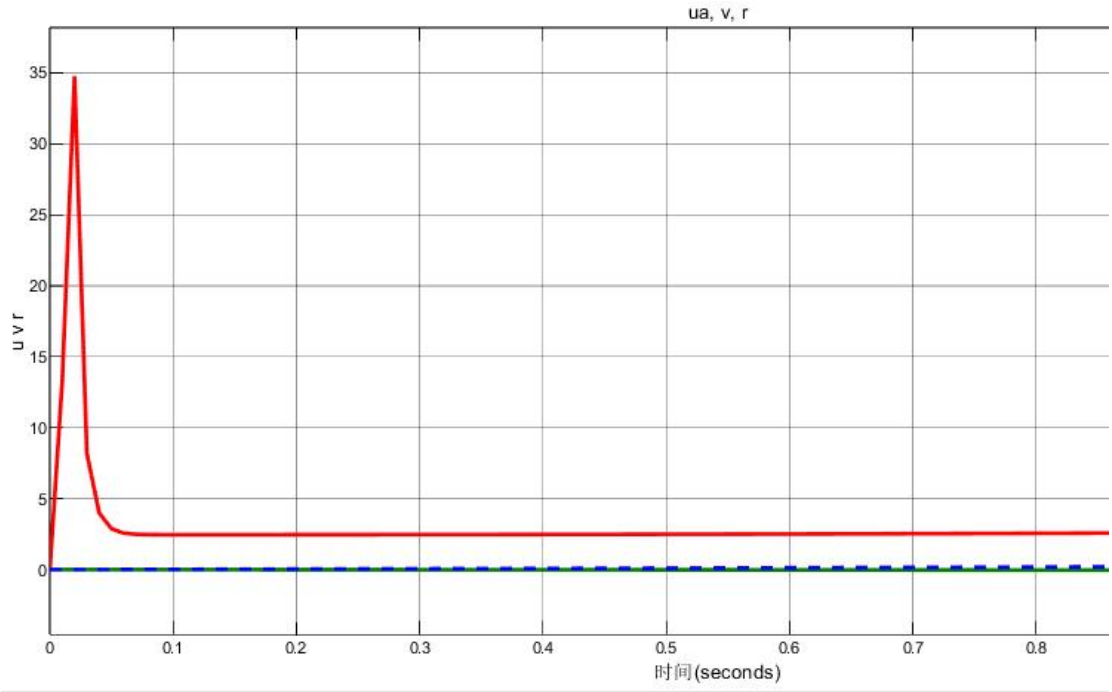
实际坐标与期望坐标点在时间 t 下的跟踪关系：





实际速度：u、v、r 变化趋势图

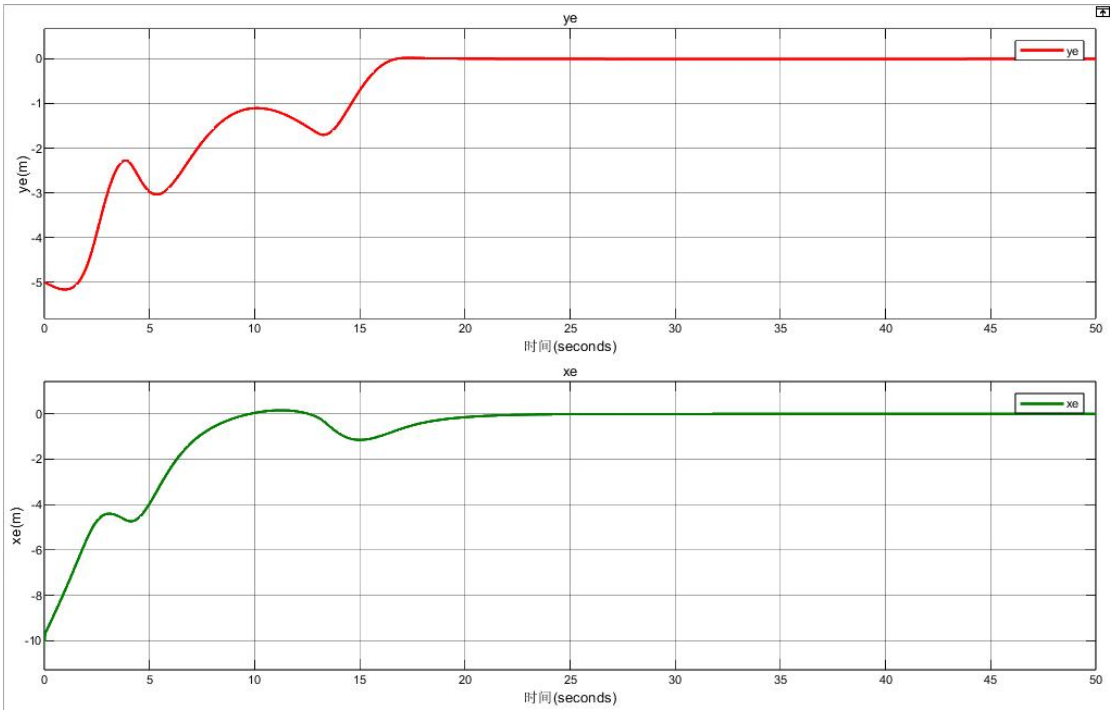




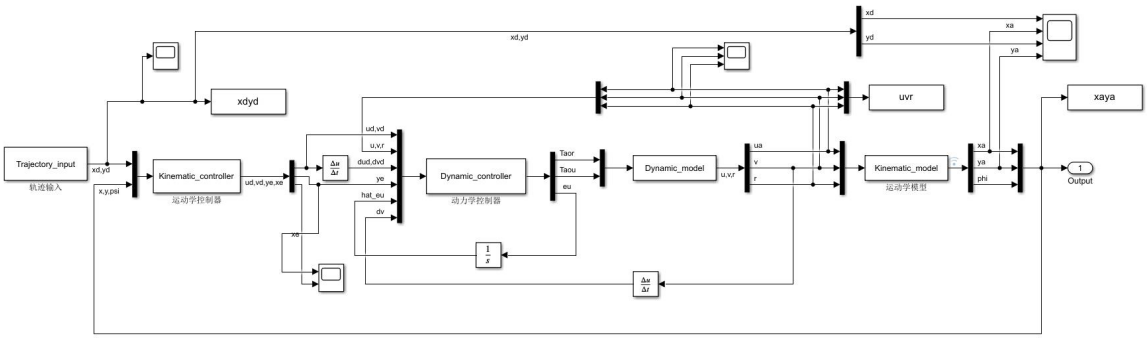
二、xe, ye 跟踪误差仿真效果：

xe = ya-yd;

xe = xa-xd;



终端滑模控制仿真



```
14      %xd,yd,xa,ya
15 -    figure(1);
16 -    phi = xaya(:,3)';
17 -    plot(t,xd,t,yd,t,xa,t,ya);
18 -    legend("xd","yd","xa","ya");
19 -    xlabel('x(m)');
20 -    ylabel('y(m)');
21 -    title('compare of x and xd');
22 -    grid on;
23
24      %期望坐标与实际坐标关于时间t的变化关系
25 -    figure(2);
26 -    plot(t,xd,'r.',t,xa,'r',t,yd,'b.',t,ya,'b');
27 -    legend("xd","xa","yd","ya");
28 -    xlabel('t(s)');
29 -    ylabel('y(m) / x(m)');
30 -    legend("desiredX","actualX","desiredY","actualY");
31 -    grid on;
32
33      %期望轨迹与跟踪轨迹变化关系
34 -    figure(3)
35 -    plot(xa,ya,'r.',xd,yd,'b.');
36 -    legend("actual","desired");
37 -    xlabel('x(m)');
38 -    ylabel('y(m)');
39 -    grid on;
40
41      %u、v、r关于时间t的变化关系
42 -    figure(4);
43 -    plot(t,u,'-r.',t,v,'-.g.',t,r,'.b');
44 -    legend("纵荡速度u","横荡速度v","航向角r");
45 -    title('u、v、r仿真对比');
46 -    xlabel(t(s));
47 -    ylabel('u、v、r');
48 -    grid on;
```