机器人Exercise04

1. transitionFunction.m

```matlab
syms x1 x2 x3
syms u1 u2
syms b_
f1 = x1 + (u1 + u2) / 2 * cos(x3 + (u2 - u1) / (2 * b_));
f2 = x2 + (u1 + u2) / 2 * sin(x3 + (u2 - u1) / (2 * b_));
f3 = x3 + (u2 - u1) / b_;
f_handle = matlabFunction([f1 f2 f3], 'Vars', {x1 x2 x3 u1 u2 b_});
f = f_handle(x(1), x(2), x(3), u(1), u(2), b);
df = jacobian([f1 f2 f3], [x1, x2, x3]);
Fx_handle = matlabFunction(df, 'Vars', {x1 x2 x3 u1 u2 b_});
F_x = Fx_handle(x(1), x(2), x(3), u(1), u(2), b);
du = jacobian([f1 f2 f3], [u1 u2]);
Fu_handle = matlabFunction(du, 'Vars', {x1 x2 x3 u1 u2 b_});
F_u = Fu_handle(x(1), x(2), x(3), u(1), u(2), b);
```
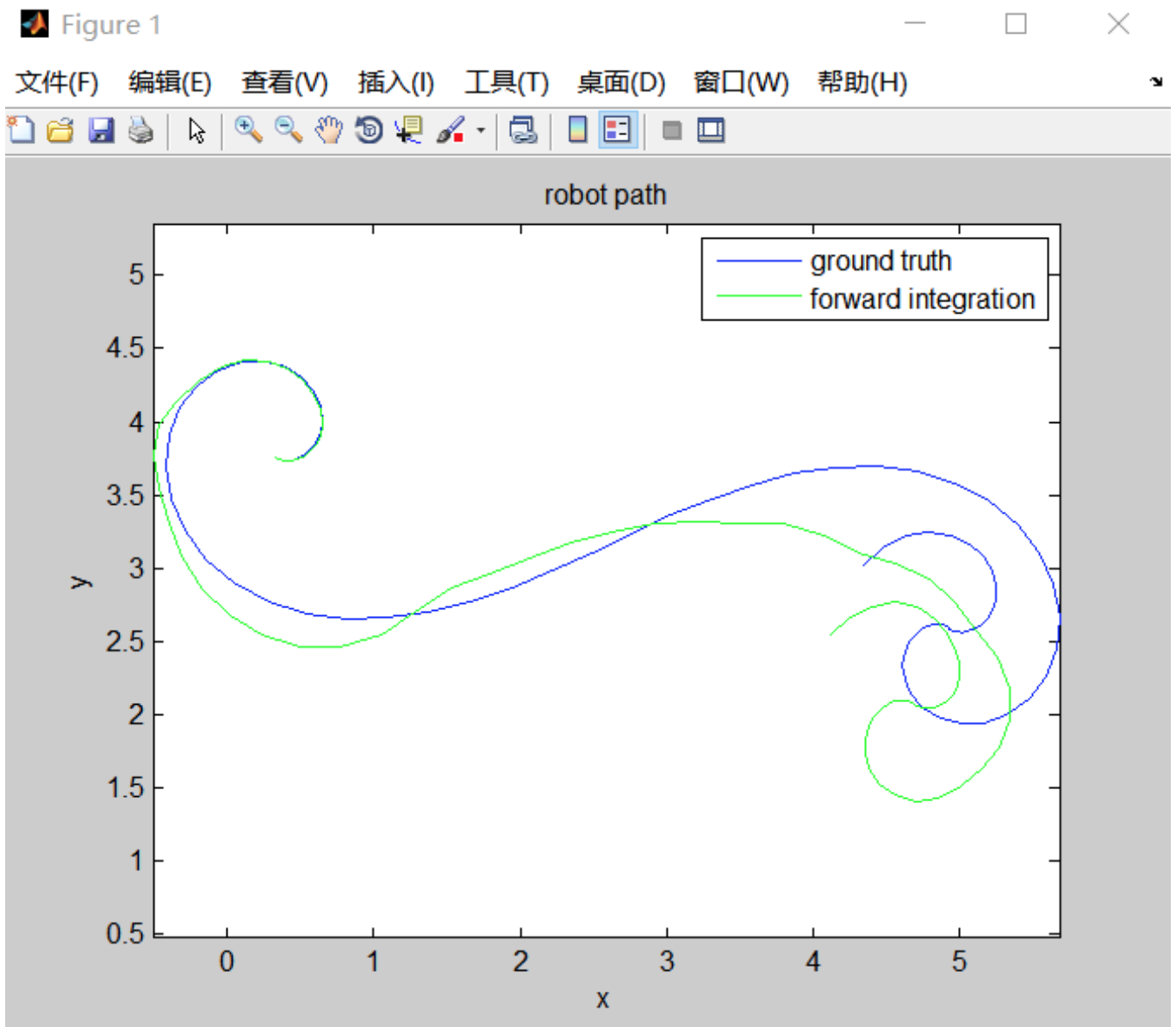
2. measurementFunction.m

```matlab
1.    h = [...
2.        m(1) - x(3)
3.        m(2) - (x(1)*cos(m(1)) + x(2)*sin(m(1)))
4.        ];
5.    H_x = [...
6.        0,          0,          -1
7.        -cos(m(1)), -sin(m(1)),  0
8.        ];
9.    [h(1), h(2), isRNegated] = normalizeLineParameters(h(1), h(2));
10.   if isRNegated
11.       H_x(2, :) = - H_x(2, :);
12.   end
```

result:
measurement function appears to be correct!