三相短路计算

# 初始化数据

clc,clear

base\_MVA = 100.0; %基准容量

error\_tol = 0.00001; %误差精度

circle\_count = 0; %循环次数

% Bus

% 1.节点号bus number 2.节点类型type 3.发电机功率 4.负荷功率

% 5.电压初始值 6.PV节点电压给定值

% 节点类型标号：1为PQ节点、2为PV节点，3为平衡节点

% 发电机、负荷功率为有名值、电压初始值为标幺值

% Branch

% 1.支路首端编号 2.支路末端编号 3.支路阻抗

% 两个矩阵都已经放入到对应的mat文件里了

% 接线1 对应plan3.PWB

% load plan3.mat

% %接线2 对应plan4.PWB

load plan4.mat

Load\_S = conj(Bus(:,4)') ./ base\_MVA; % 负载标幺值

Load\_Y = conj(Load\_S); % 负荷导纳

slack\_bus\_voltage = 1; %平衡节点电压幅值

slack\_bus\_ang = 0; %平衡节点电压相角

%节点数

node\_num = size(Bus,1);

# 求节点导纳矩阵

Y = zeros(node\_num,node\_num);

for i = 1:size(Branch,1)

p = Branch(i,1);

q = Branch(i,2);

node\_data\_y = 1 ./ Branch(i,3);

% 修改节点自导纳

Y(p,p) = Y(p,p) + node\_data\_y;

% 修改连接节点自导纳

Y(q,q) = Y(q,q) + node\_data\_y;

% 修改互导纳

Y(p,q) = Y(p,q) - node\_data\_y;

Y(q,p) = Y(p,q);

end

for i = 1:node\_num

Y(i,i) = Y(i,i) + Load\_Y(i);

if i == 6 || i == 7

Y(i,i) = Y(i,i) - 1i; % 减去发电机的导纳

end

end

# 三相短路电流计算

Z=inv(Y); % 求节点导阻抗矩阵

Zff = zeros(node\_num,1);

for i=1:node\_num

Zff(i)=Z(i,i);

end

disp('Zff = ');

disp(Zff);

U = ones(node\_num,1);

I=U./Zff;

# 显示结果

I\_real = real(I);

I\_imag = imag(I);

I\_amp = zeros(node\_num,1);

I\_ang = zeros(node\_num,1);

for i = 1:node\_num

temp\_amp = sqrt(I\_real(i)^2+I\_imag(i)^2);

temp\_ang = rad2deg(atan(I\_imag(i)/I\_real(i)));

I\_amp(i) = temp\_amp;

I\_ang(i) = temp\_ang;

end

disp('各节点短路电流幅值')

I\_amp

disp('各节点短路电流相位')

I\_ang