%% 差分格式的系数矩阵的构造

A=zeros(m,m);

for i=1:m1-1

A(i,i)=1+2\*r1;

A(i,i+1)=-r1;

if i>=2

A(i,i-1)=-r1;

end

end

A(m1,m1)=(lam\_1/derta\_x1+lam\_2/derta\_x2);

A(m1,m1-1)=-lam\_1/derta\_x1;

A(m1,m1+1)=-lam\_2/derta\_x2;

for i=m1+1:m1+m2-1

A(i,i)=1+2\*r2;

A(i,i+1)=-r2;

A(i,i-1)=-r2;

end

A(m1+m2,m1+m2)=(lam\_2/derta\_x2+lam\_3/derta\_x3);

A(m1+m2,m1+m2-1)=-lam\_2/derta\_x2;

A(m1+m2,m1+m2+1)=-lam\_3/derta\_x3;

for i=m1+m2+1:m1+m2+m3-1

A(i,i)=1+2\*r3;

A(i,i+1)=-r3;

A(i,i-1)=-r3;

end

A(m1+m2+m3,m1+m2+m3)=(lam\_3/derta\_x3+lam\_4/derta\_x4);

A(m1+m2+m3,m1+m2+m3-1)=-lam\_3/derta\_x3;

A(m1+m2+m3,m1+m2+m3+1)=-lam\_4/derta\_x4;

for i=m1+m2+m3+1:m1+m2+m3+m4-1

31A(i,i)=1+2\*r4;

A(i,i-1)=-r4;

A(i,i+1)=-r4;

end

A(m,m)=h+lam\_4/derta\_x4;

A(m,m-1)=-lam\_4/derta\_x4;

%% 构造右端项

for k=2:n+1

b=zeros(m,1);

for i=2:m-1

b(i,1)=u(i+1,k-1);

end

b(1,1)=u(2,k-1)+r1\*u(1,k);

b(m1,1)=0;

b(m1+m2,1)=0;

b(m1+m2+m3,1)=0;

b(m,1)=37\*h;

%% 追赶法求解

bb=diag(A)';

aa=[0,diag(A,-1)'];

c=diag(A,1)';

N=length(bb);

L=zeros(N);

uu0=0;y0=0;aa(1)=0;

L(1)=bb(1)-aa(1)\*uu0;

y(1)=(b(1)-y0\*aa(1))/L(1);

uu(1)=c(1)/L(1);

for i=2:(N-1)

L(i)=bb(i)-aa(i)\*uu(i-1);

y(i)=(b(i)-y(i-1)\*aa(i))/L(i);

uu(i)=c(i)/L(i);

end

L(N)=bb(N)-aa(N)\*uu(N-1);

y(N)=(b(N)-y(N-1)\*aa(N))/L(N);

x(N)=y(N);

for i=(N-1):-1:1

x(i)=y(i)-uu(i)\*x(i+1);

end

u(2:m+1,k)=x';

end

32q=u(m+1,t+1)-48.08;

z=[z q];

[d p]=min(abs(z));

end