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Lớp: K57-HDH

Chươngtrìnhchạy:

functionftsong()

 close all;

 dh=.1;

 ro=1.02;

 f=5500;

 D=100;

 c=1500;

 N=ceil(D/dh); % N la so nut luoi

 c=linspace(1500,1450,N); % tao mot vector co gia tri ngaunhien dc gh

 clf;

 z=dh:dh:D;

% dieukienbientren

 figure(1);

 A=make\_model(dh,c,f,N);

 [V,K]=SolveEigsA(A);

% phanve

 subplot(1,4,1); % taocactructrong mot phancuacua so do hoa so hang va so cot duoc chia sau do chon vung de ve

 plot(V(:,1:5),z); % (hinhthu 1)ve do thituyentinhtrongkhonggian 2 chieu, vegia tri x theogia tri y

 subplot(1,4,4);

 plot(V(:,1)\*V(10,1)/abs(V(10,1)),z,' r ');

 holdon;

%view(0,-90);

 A=make\_model\_1(dh,c,f,N);

 [V,K1]=SolveEigsA(A);

% phanve

 subplot(1,4,2);

 plot(V(:,1:5),z);

 subplot(1,4,4);

 plot(V(:,1)\*V(10,1)/abs(V(10,1)),z,'r-\*');

 holdon;

%view(0,-90);

 A=make\_model\_2(dh,c,f,N);

 [V,K2]=SolveEigsA(A);

 subplot(1,4,3);

 plot(V(:,1:5),z);

 subplot(1,4,4);

 plot(V(:,1)\*V(10,1)/abs(V(10,1)),z,'g');

holdon;

 [ K(:) K1(:) K2(:)]

% tinhtruong song

 mode =5;

 r = 100:1:1000;

 r=r\*1e3;

% P= P tainguon

 zSource = ceil(D/dh/(10/6));

 Pzr=Pressure(K(1:mode),V(:,1:mode),r,zSource);

 [zzrr]=meshgrid(z,r);

 figure(2);

 surface(rr,zz,abs(Pzr'));

 shadinginterp;

 colorbar;

function A = make\_model (adh,c,f,N)

 g=ones(1,N-1);

 omega=2\*pi()\*f;

 d=-2+adh.^2.\*omega^2./c.^2.\*ones(1,N);

 A=diag(d) + diag(g,1) + diag(g,-1);

function A = make\_model\_1 (dh,c,f,N)

 g=ones(1,N-1);

 omega=2\*pi()\*f;

 d=-2+dh.^2.\*omega^2./c.^2.\*ones(1,N);

 A=diag(d) + diag(g,1) + diag(g,-1);

 A(1,2)=0;

function A = make\_model\_2 (dh,c,f,N)

 g=ones(1,N-1);

 omega=2\*pi()\*f;

 d=-2+dh.^2.\*omega^2./c.^2.\*ones(1,N);

 A=diag(d) + diag(g,1) + diag(g,-1);

 A(1,2)=0.5;

function [V,K]=SolveEigA(A)

 [V,K]=eig(A)

 K=diag(K);

 [K, index]=sort(K);

 index=flipud(index); % dao hang tutrenxuongduoi

 K=flipud(K);

 K=sqrt(K);

%V=fliplr(V);

function [V,K]=SolveEigsA(A)

 [V,K]=eigs(sparse(A),50,'lm')

 K=diag(K);

 K=sqrt(K);

%

functionPzr=Pressure(K,V,r,zSource);

 Pzk = V\*diag(V(zSource,:));

 Pkr = K(:)\*reshape(r,1,length(r));

 Pkr = exp(i\*Pkr)./sqrt(Pkr);

 Pzr = Pzk\*Pkr \*i\*exp(i\*pi()/4)/sqrt(8\*pi);