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MSV: 12000397

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);