

The background features a dynamic, abstract composition of curved, overlapping lines in various shades of blue and white. These lines create a sense of depth and movement, resembling a stylized architectural structure or a data visualization. The overall aesthetic is clean and modern.

Codage sous Matlab

Code – Signal Sinusoïdal

- `fe=1000;`
- `te=1/fe;`

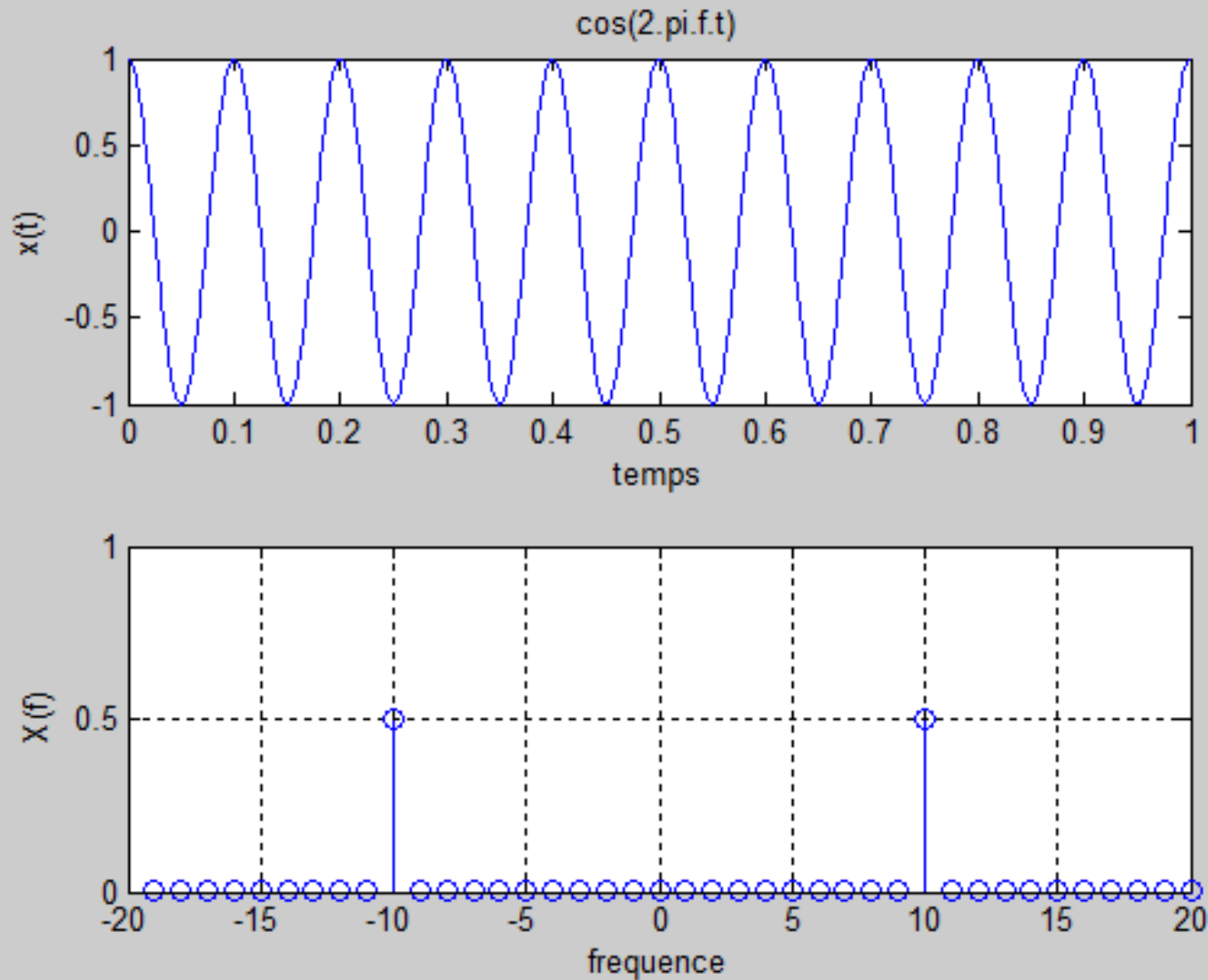
- `% Définition du Signal cosinus`

- `subplot(2,1,1);`
- `t=0:te:1;`
- `x=cos(2*pi*10*t);`
- `plot(t,x);`
- `xlabel('temps');`
- `ylabel('x(t)');`
- `title('cos(2.pi.f.t)');`

- `% Transformée de Fourier`

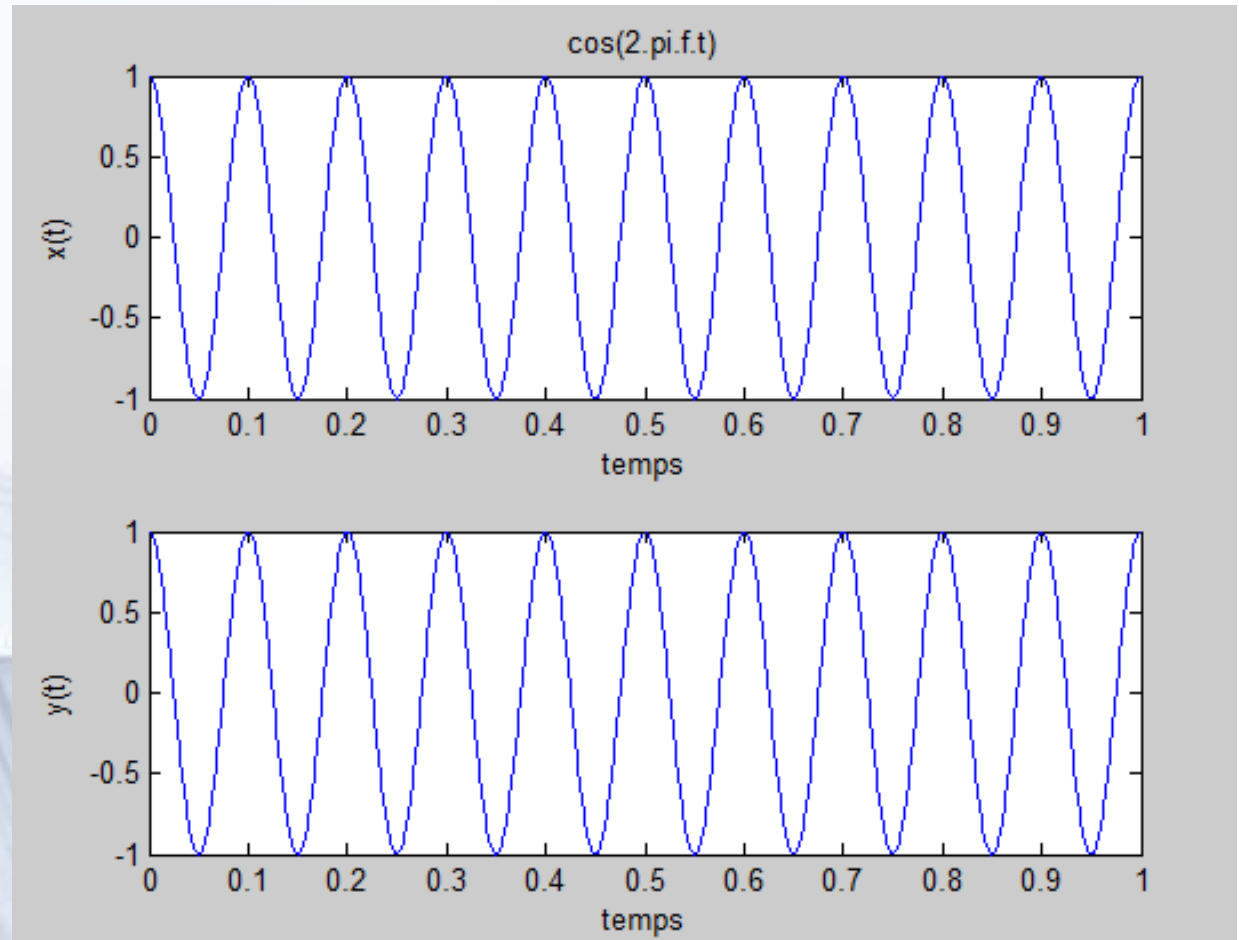
- `subplot(2,1,2);`
- `f=linspace(-fe/2,fe/2,length(t));`
- `Xf=fftshift(fft(x)/fe);`
- `stem(f,abs(Xf));`
- `axis([-20,20,0,1]);`
- `grid on;`
- `xlabel('frequence');`
- `ylabel('X(f)');`

Graphiques



Transformée de Fourier Inverse

- % Transformée de Fourier inverse
- `y=ifft(fftshift(Xf))*fe ;`
- `plot(t,y) ;`
- `axis([0,1,-1,1]);`
- `xlabel('temps') ;`
- `ylabel('y(t)') ;`



Code – Superposition de Signaux Sinusoïdaux

- `fe=1000;`
- `te=1/fe;`

- `% Définition du Signal superposition de sinus`

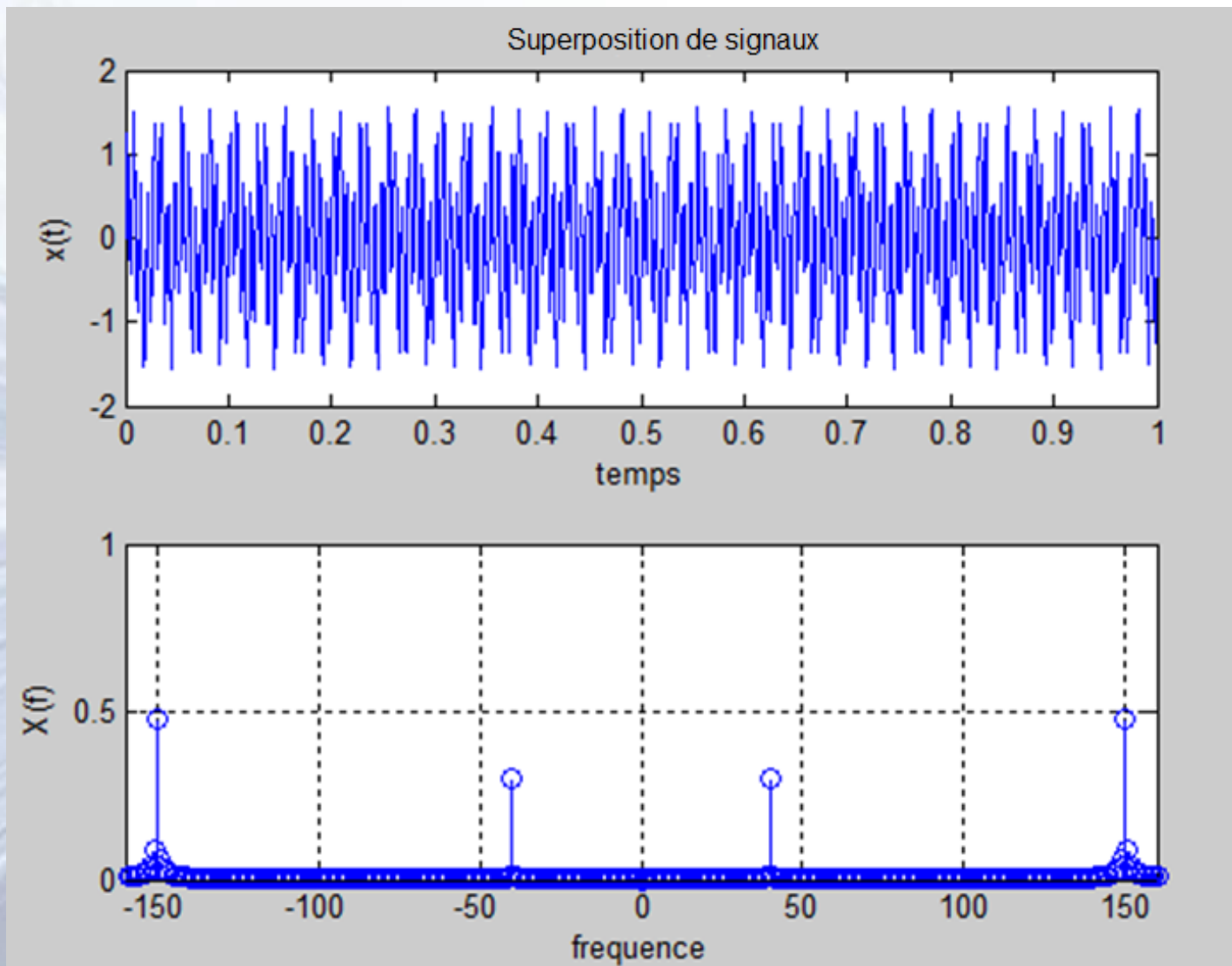
- `subplot(2,1,1);`
- `t=0:te:1;`
- `x=sin(2*pi*150*t)+0.6*sin(2*pi*40*t);`
- `plot(t,x);`

- `xlabel('temps');`
- `ylabel('x(t)');`
- `title('Superposition de signaux');`

- `% Transformée de Fourier`

- `subplot(2,1,2);`
- `f=linspace(-fe/2,fe/2,length(t));`
- `Xf=fftshift(fft(x)/fe);`
- `stem(f,abs(Xf));`
- `axis([-160,160,0,1]);`
- `grid on;`
- `xlabel('frequence');`
- `ylabel('X(f)');`

Graphiques



Code – Signal Carré

- `fe=1000;`
- `te=1/fe;`

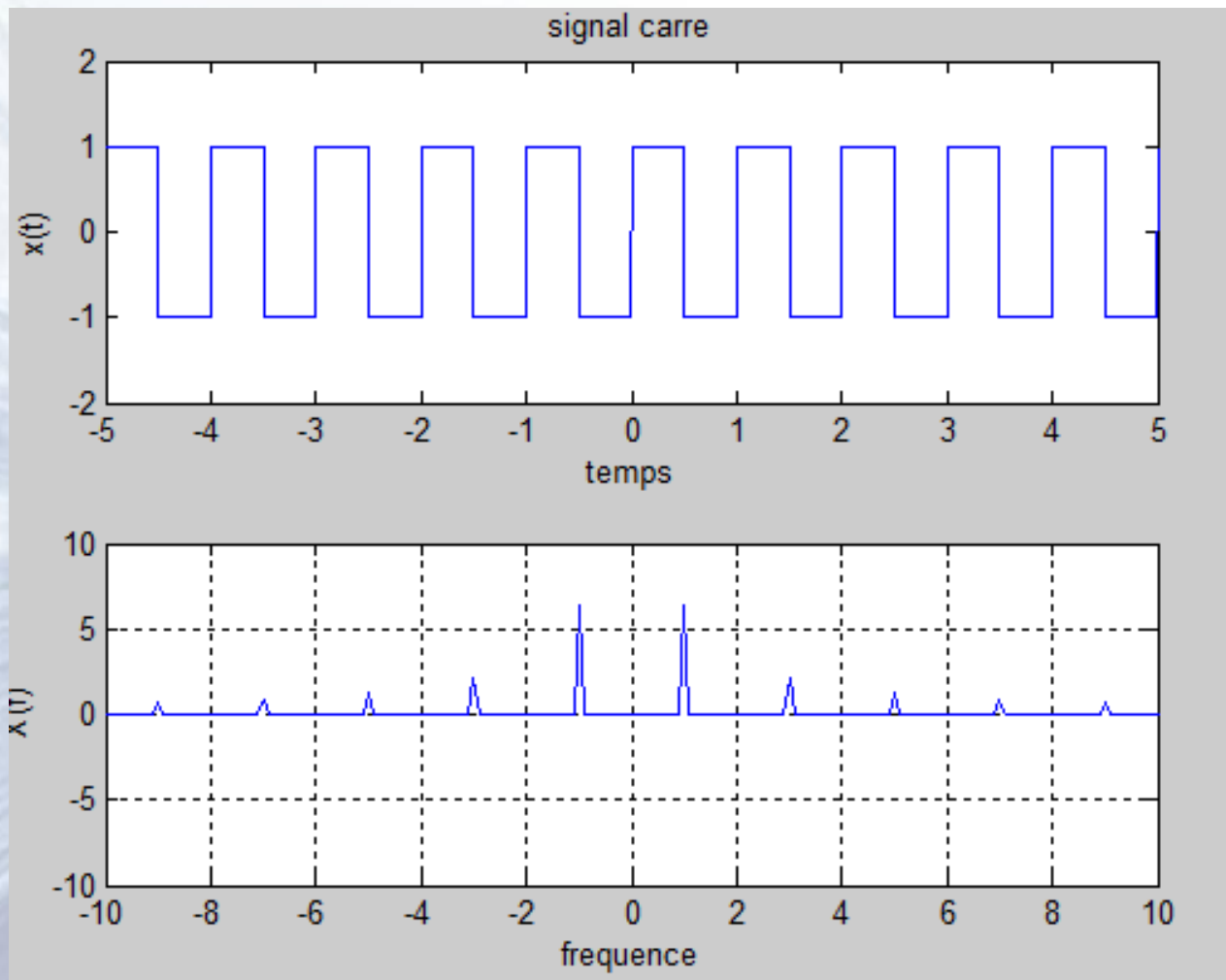
- `% Définition du signal carré`

- `subplot(2,1,1);`
- `t=[-5:0.001:5];`
- `x=square(2*pi*t);`
- `plot(t,x);`
- `axis([-5,5,-2,2]);`
- `xlabel('temps');`
- `ylabel('x(t)');`
- `title('signal carre');`

- `% Transformée de Fourier`

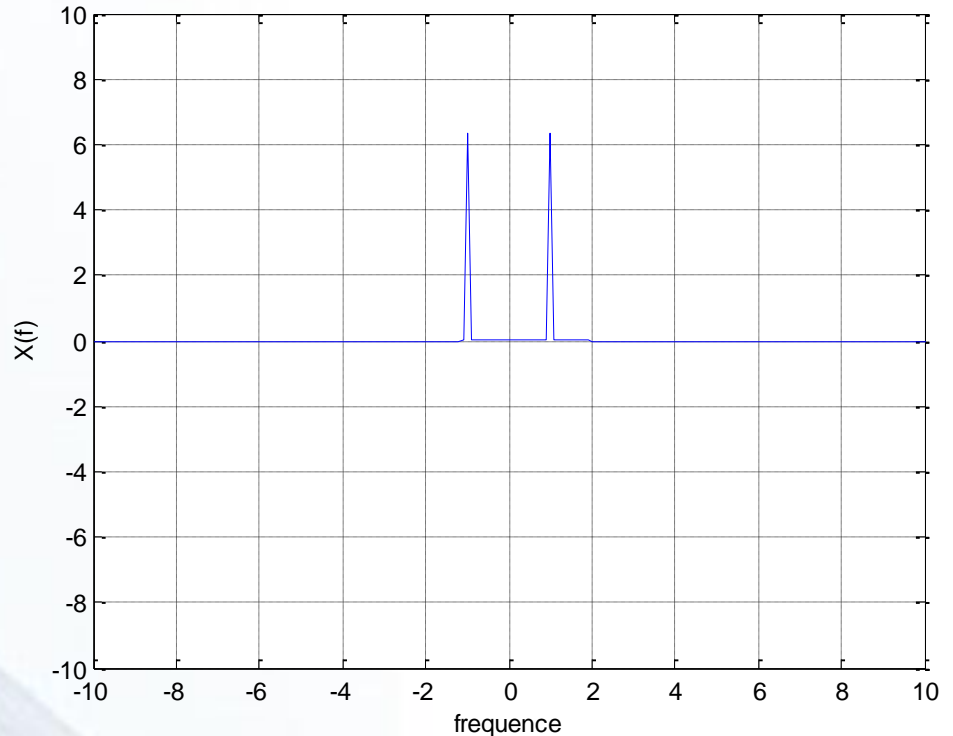
- `subplot(2,1,2);`
- `f=linspace(-fe/2,fe/2,length(t));`
- `Xf=fftshift(fft(x)/fe);`
- `plot(f,abs(Xf));`
- `axis([-10,10,-10,10]);`
- `grid on;`
- `xlabel('frequence');`
- `ylabel('X(f)');`

Graphiques



Application d'un filtre

- % Création d'un filtre composé de 0 et 1
- `A=zeros(1,length(t));`
- `for i=4990:5020`
- `A(i)=1;`
- `end`
- % Spectre du signal filtré
- `plot(f,A.*abs(Xf));`
- `axis([-10,10,-10,10]);`
- `grid on;`
- `xlabel('frequence');`
- `ylabel('X(f)');`



Transformée de Fourier inverse

- % Transformée de Fourier inverse du signal filtré
- `y=ifft(fftshift(A.*Xf))*fe ;`
- `plot(t,y) ;`
- `axis([-5,5,-2,2]);`
- `xlabel('temps') ;`
- `ylabel('y(t)') ;`

