Examples of using the graphicx and subcaption packages for typesetting figures

Approx-Error

25th September 2025

Here are various figures typeset using the graphicx and subcaption packages.

1   Single Images

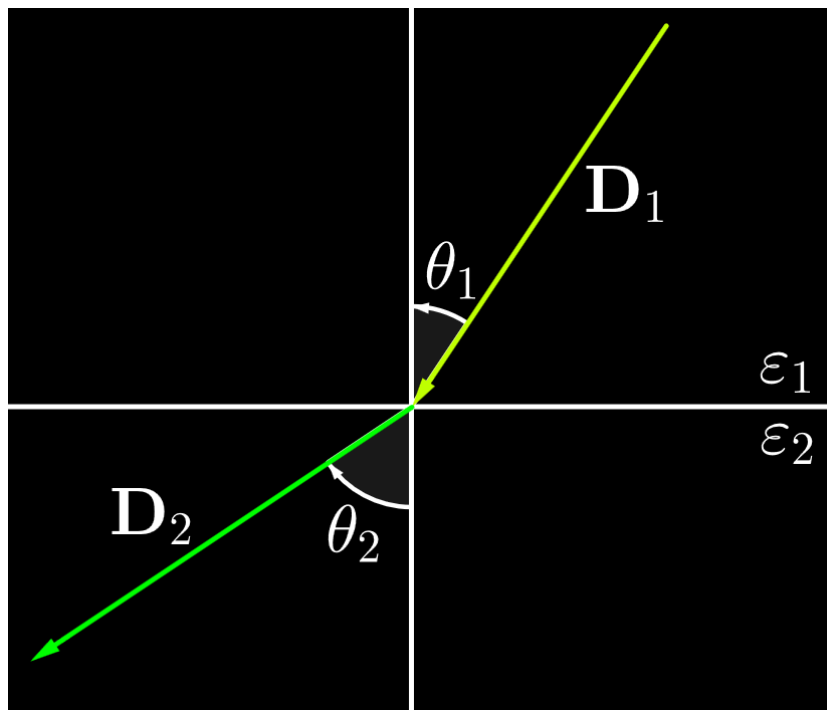A simple figure with a caption and a label for referencing: figure 1. This figure only uses the graphicx package.

Figure 1: The electric displacement field $\mathbf{D}_1$ diffracts at the boundary between mediums with permittivities ε_1 and ε_2. Beyond the boundary, the field is described by $\mathbf{D}_2$. The incident angle θ_1 and refraction angle θ_2 are measured from the surface normal.

The caption can also be placed before the image like in figure 2.

Figure 2: The four most common types of basic digital signals: sine, square, triangle and sawtooth.
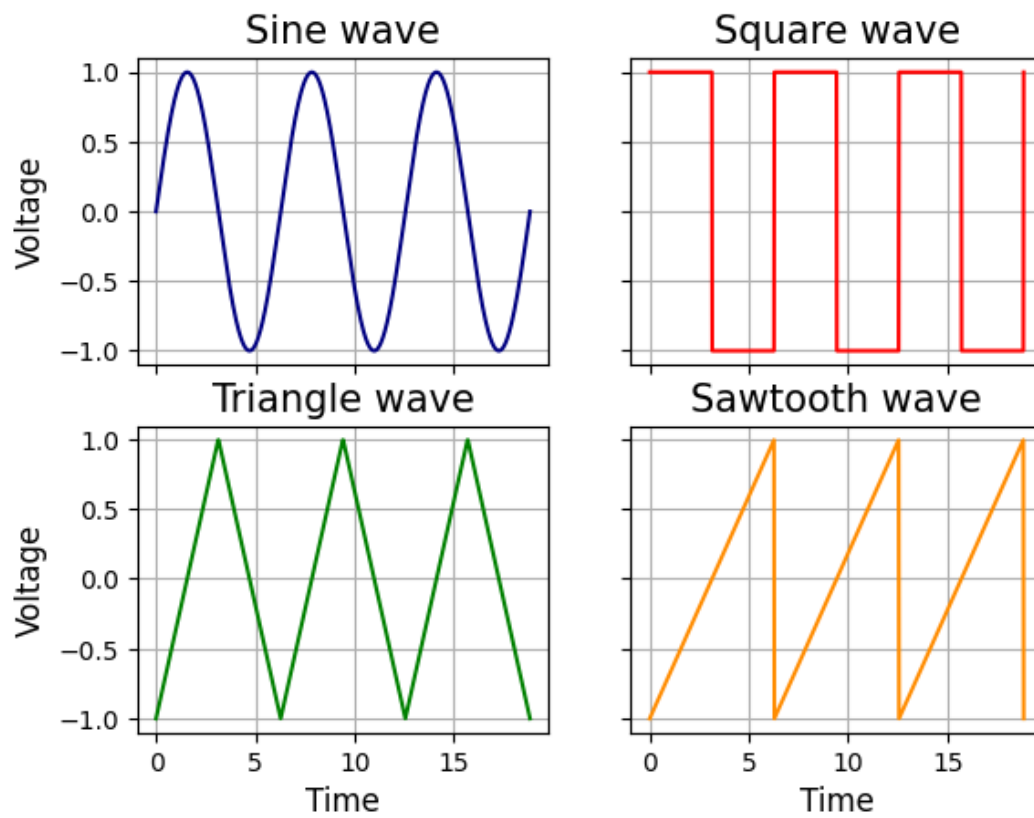
2 Multiple Images

A figure with two images side by side. Each figure can be referenced independently: figure 3 contains figures 3(a) and 3(b). This figure utilizes both the graphicx package and the subcaption package.

Figure 3: Data can be encoded into a transmitted signal using various techniques. Two commonly used techniques are amplitude modulation (AM) and frequency modulation (FM).
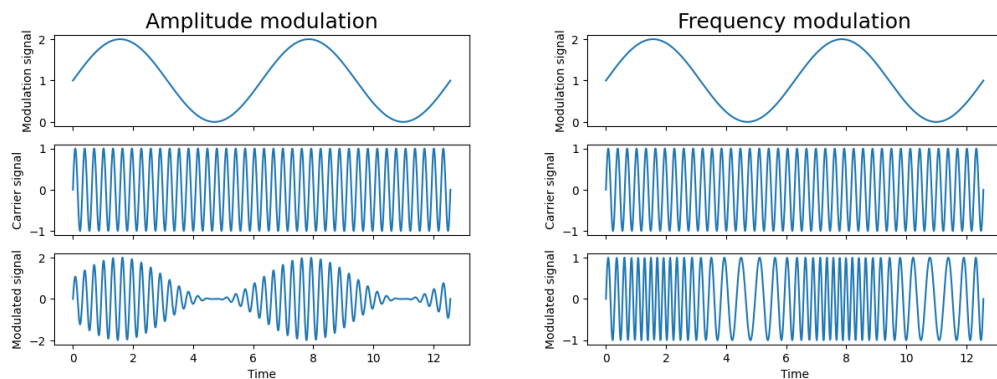
(a) Amplitude modulation varies the amplitude of the carrier signal as a function of the phase of the modulation signal

(b) Frequency modulation varies the frequency of the carrier signal as a function of the phase of the modulation signal

A figure with two images on top of each other. Again each figure can be referenced independently: figure 4 contains figures 4(a) and 4(b). This figure utilizes both the graphicx package and the subcaption package. The figures' horizontal positions have been changed with the aid of the \hspace command.

Figure 4: Using the discrete Fourier transform, the frequency spectrum of the noise signal was revealed.
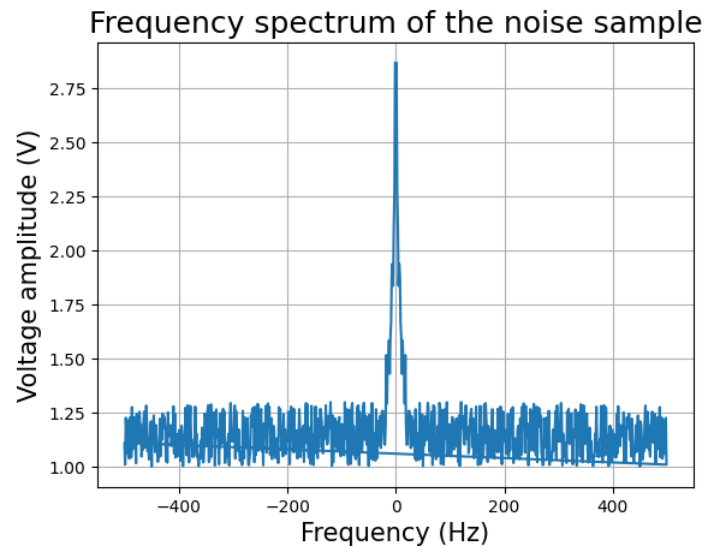

(a) A plot of the frequency spectrum shows that the most powerful frequencies in the signal are low frequencies.
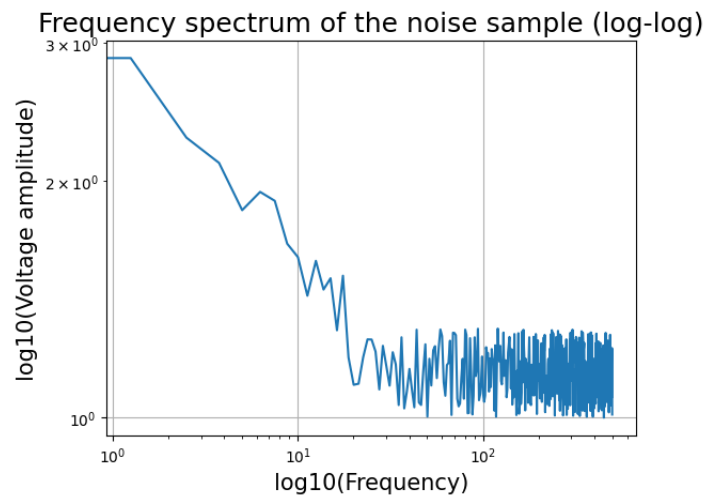

(b) A log-log plot of the same spectrum reveals that the noise contained in the signal resembles pink noise at lower frequencies and white noise at higher frequencies.

A figure with four images arranged into a square. Again each figure can be referenced independently: figure 5 contains figures 5(a), 5(b), 5(c) and 5(d). This figure utilizes both the graphicx package and the subcaption package. The subfigures are aligned at the top by passing `t` as an argument to the subfigure environment: `\subfigure[t]{0.45\textwidth}....` The horizontal spacing is achieved with the `\hfill` command
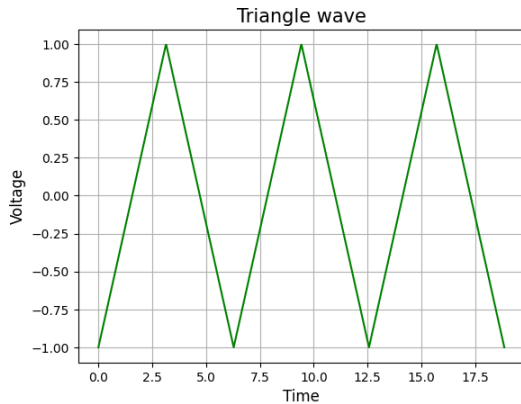
Figure 5: There are many different types of basic digital signals. The most common types are sine, square, triangle and sawtooth.
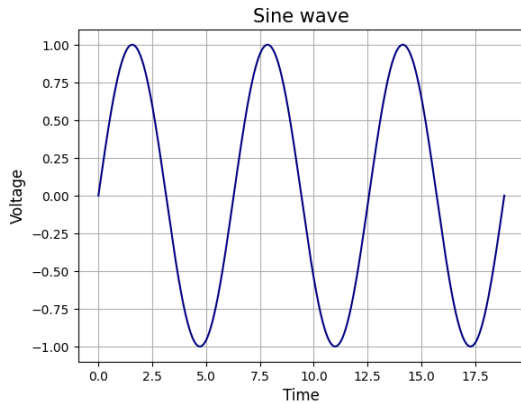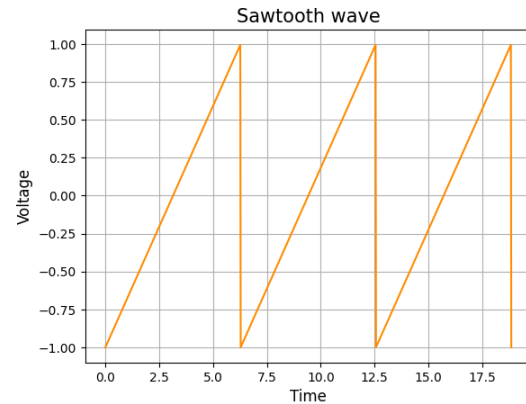

(a) The sine wave is perhaps the most recognizable signal.
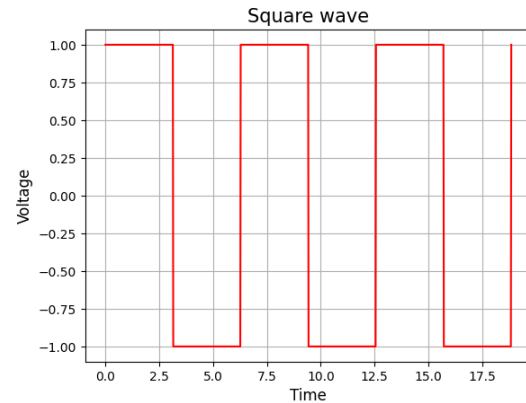
(b) The square wave alternates between two extremes.

(c) The triangle wave sounds harsh.

(d) The sawtooth wave is a special case of the triangle wave but common enough to be separately named.

A figure with 12 images arranged into a rectangle. The subfigures are aligned at the top by passing `t` as an argument to the subfigure environment: `\subfigure[t]{0.3\textwidth}`.... The horizontal spacing is achieved with the `\hfill` command

Figure 6: Different trigonometric and hyperbolic functions plotted on the domain $[-1, 1]$ where each successive picture in a row has a greater power of x in the argument

(a) Graph of $\sin(x)$

(b) Graph of $\sin(x^2)$

(c) Graph of $\sin(x^3)$

(d) Graph of $\sinh(x)$

(e) Graph of $\sinh(x^2)$

(f) Graph of $\sinh(x^3)$

(g) Graph of $\cos(x)$

(h) Graph of $\cos(x^2)$

(i) Graph of $\cos(x^3)$

(j) Graph of $\cosh(x)$

(k) Graph of $\cosh(x^2)$

(l) Graph of $\cosh(x^3)$