

The diagram illustrates the decomposition of a signal $Y(t)$ into a linear model $X\beta(t)$ plus an error term $E(t)$.

On the left, the signal $Y(t)$ is represented by a vertical vector containing a green waveform at the top and a blue waveform at the bottom, with three vertical dots in between. Below the vector is a double-headed arrow labeled $Y(t)$.

This is followed by an equals sign $=$.

The first term on the right is the design matrix X , represented by a vertical vector with a '1' at the top and bottom, and three vertical dots in between. To the right of the vector, the first row is labeled $x_{11}=1$ and the last row is labeled $x_{1N}=0$ in red. Below the vector is a double-headed arrow labeled X .

The second term is the coefficient vector $\beta(t)$, represented by a vertical vector containing a black waveform at the top and a red curve at the bottom. An arrow points to the top waveform with the label $\beta_0(t)$, and another arrow points to the red curve with the label $\beta_1(t)$ in red. Below the vector is a double-headed arrow labeled $\beta(t)$.

This is followed by a plus sign $+$.

The final term is the error term $E(t)$, represented by a vertical vector containing a green waveform at the top and a blue waveform at the bottom, with three vertical dots in between. Below the vector is a double-headed arrow labeled $E(t)$.