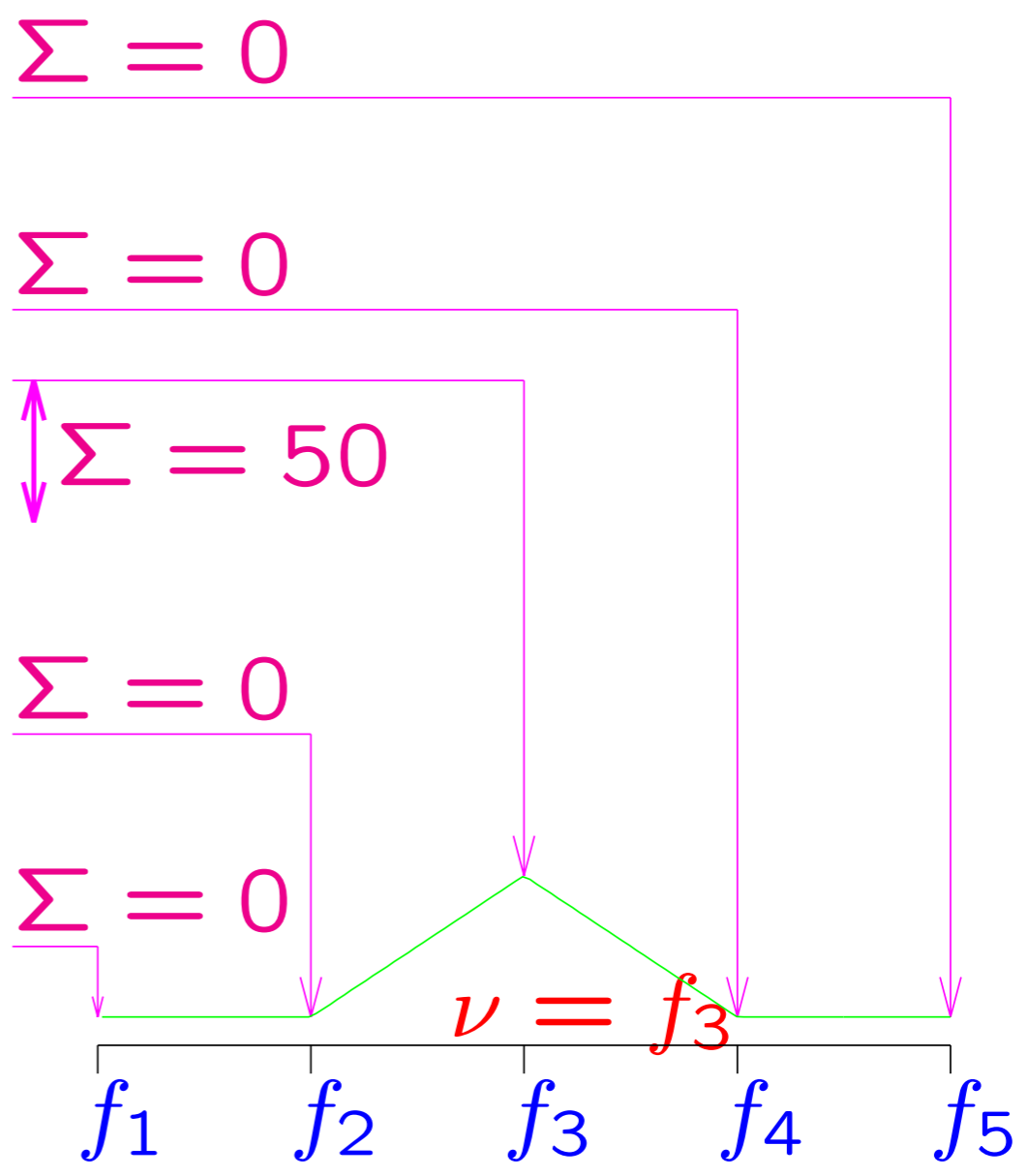
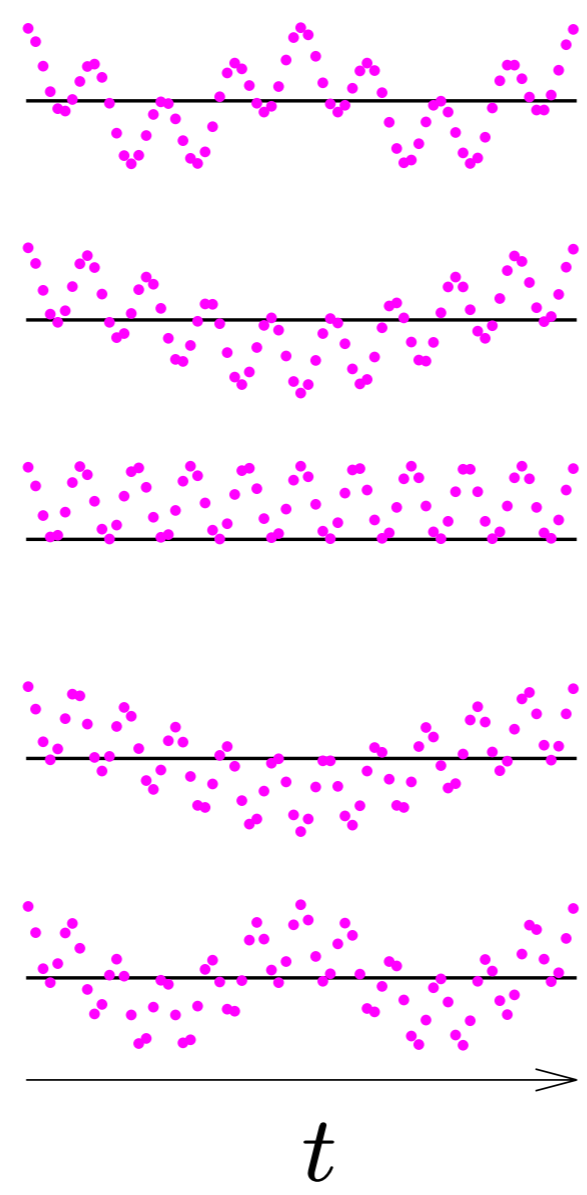
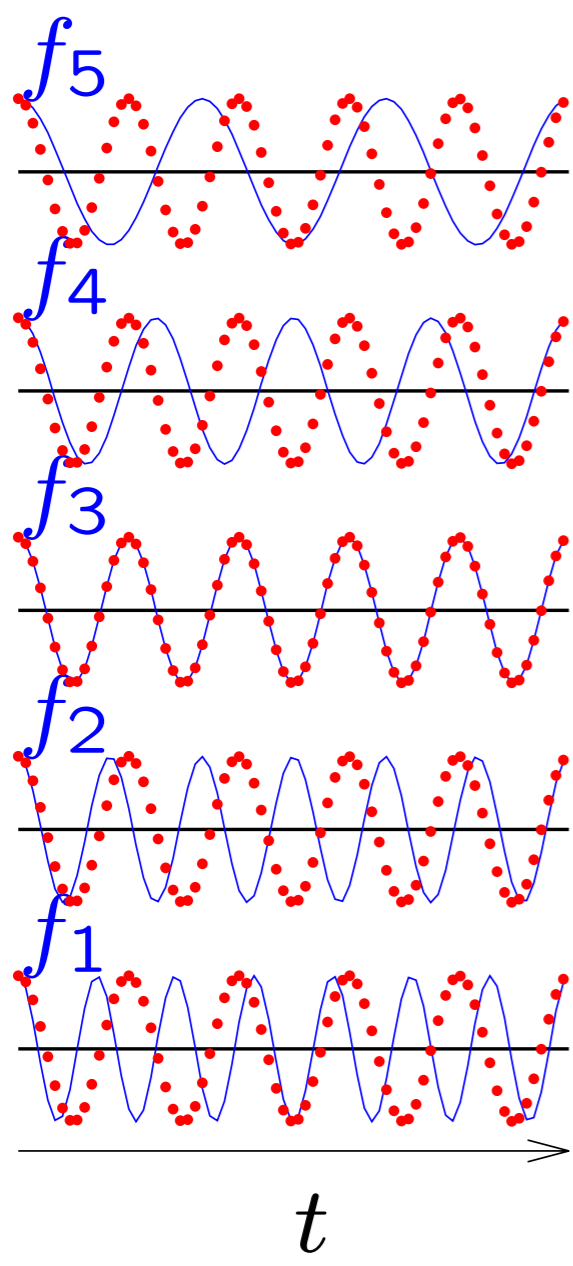


Lecture 3: Signal acquisition and processing

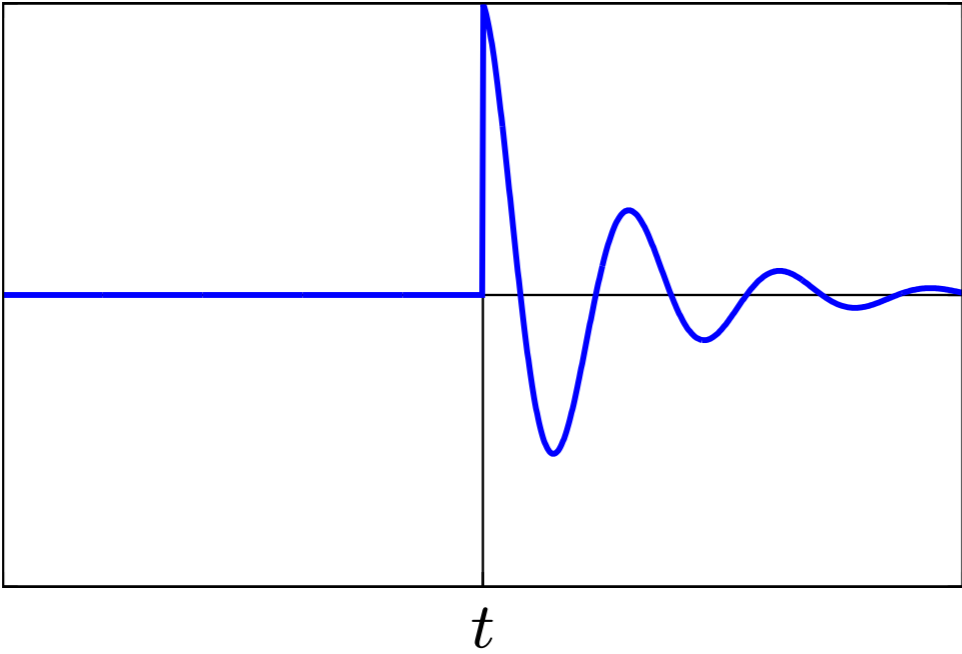
$\nu = ?$



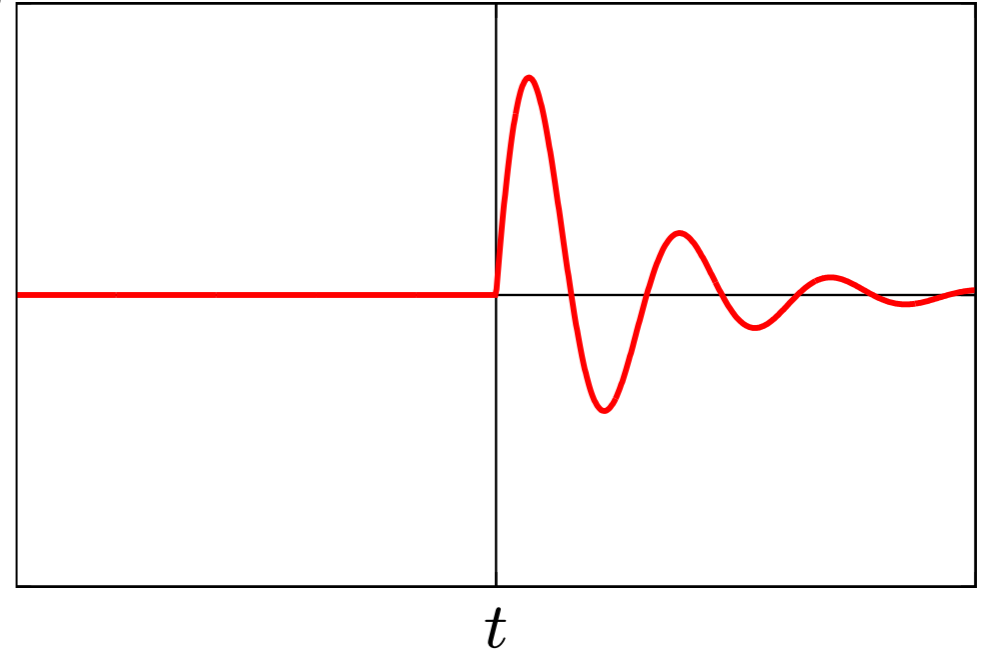
Two channels, complex Fourier transformation

$$a + ib \longrightarrow X + iY$$

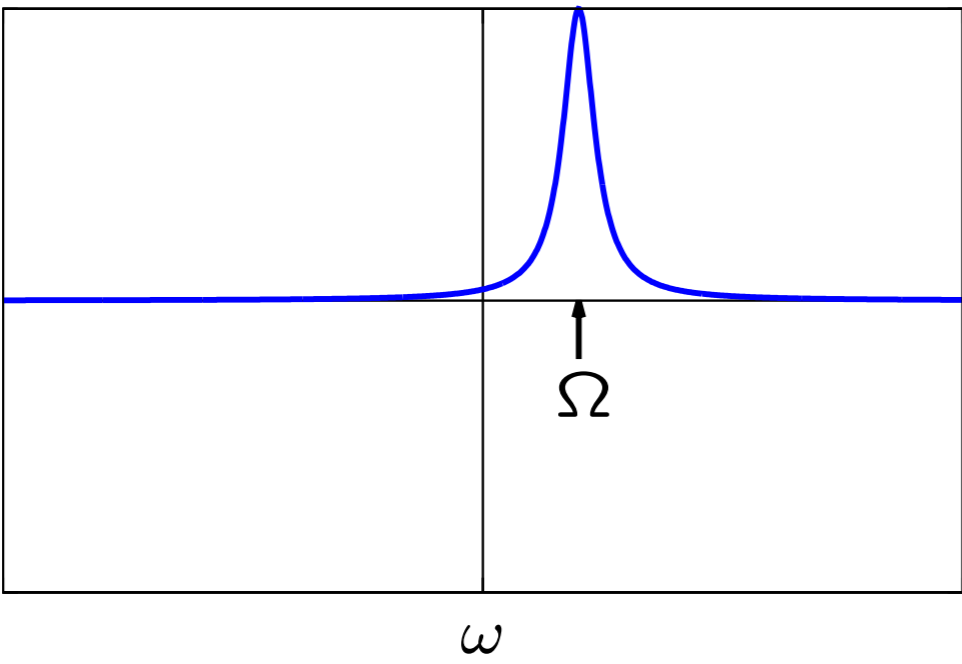
Signal in channel 1: $\Re\{y(t)\}$



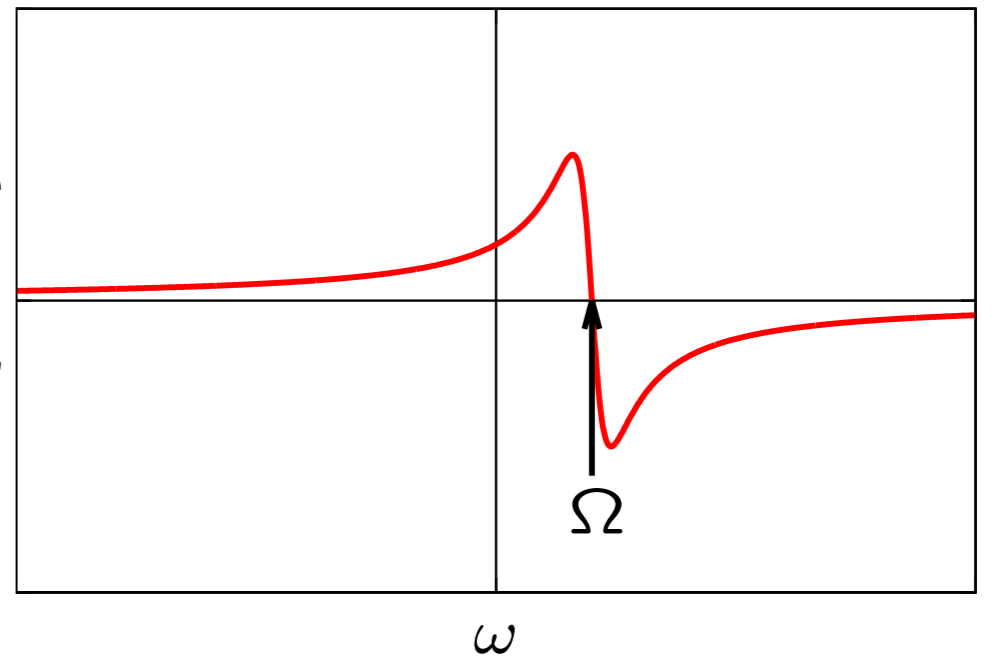
Signal in channel 2: $\Im\{y(t)\}$



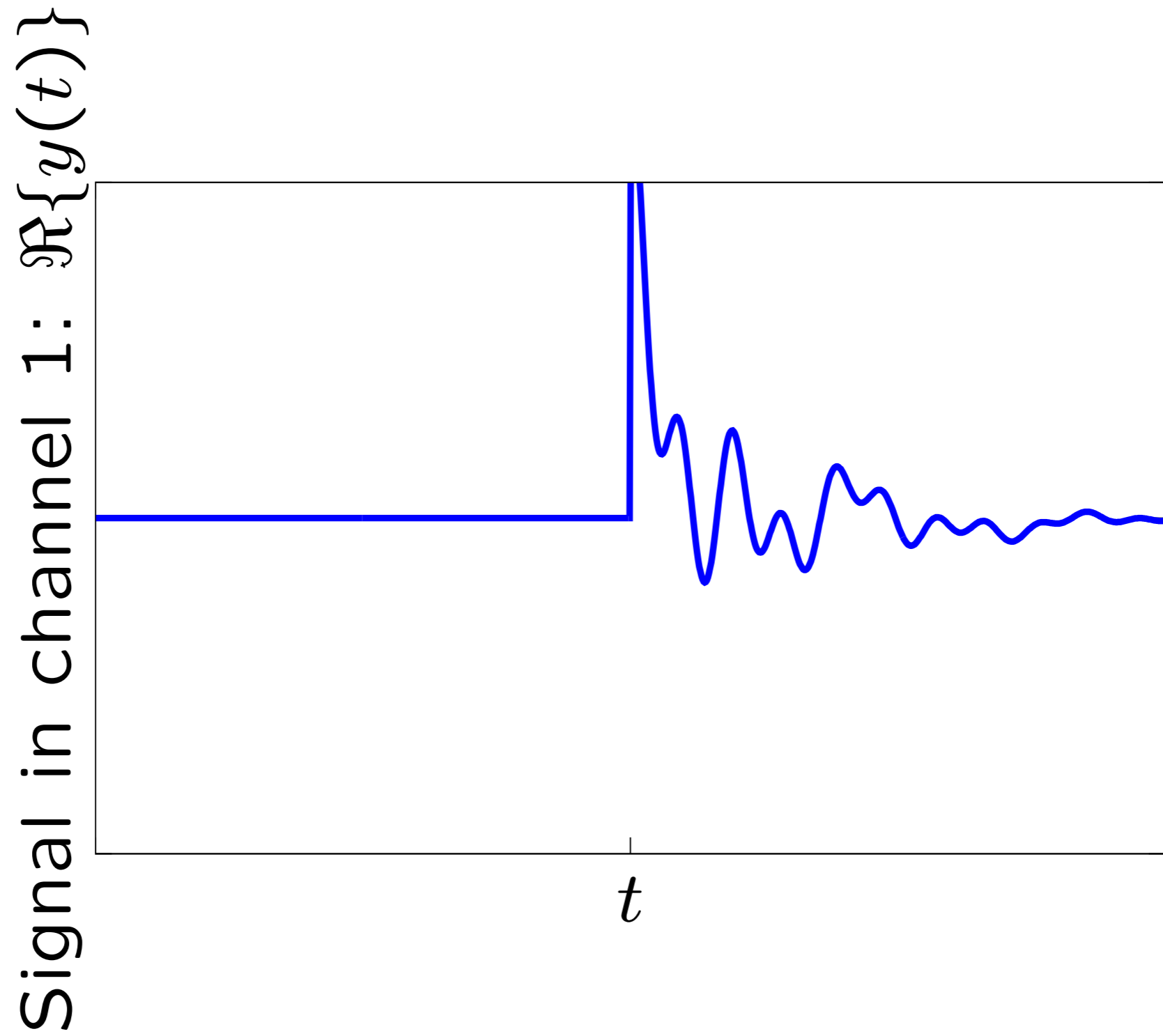
$\Re\{Y(\omega)\}$



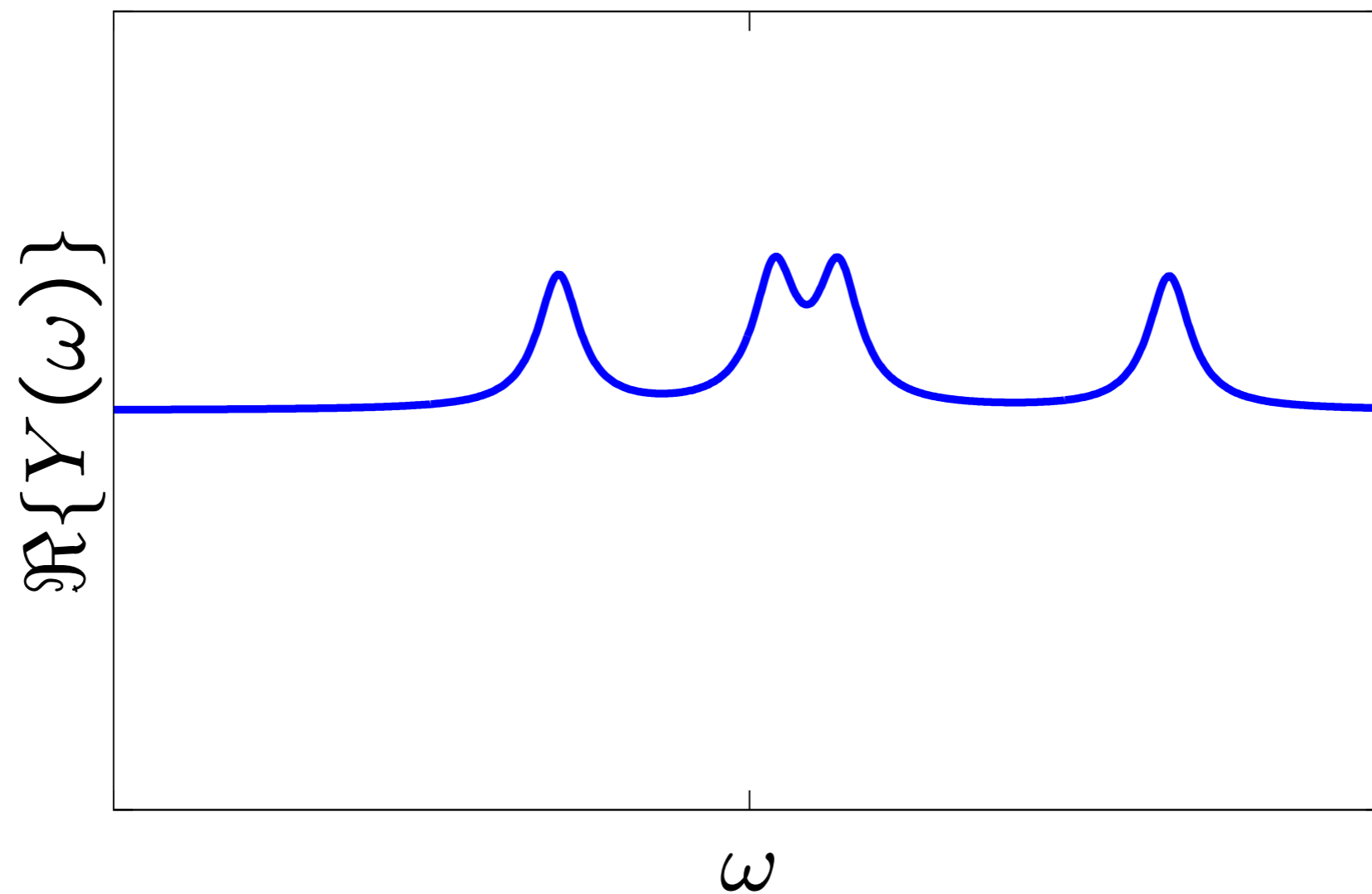
$\Im\{Y(\omega)\}$



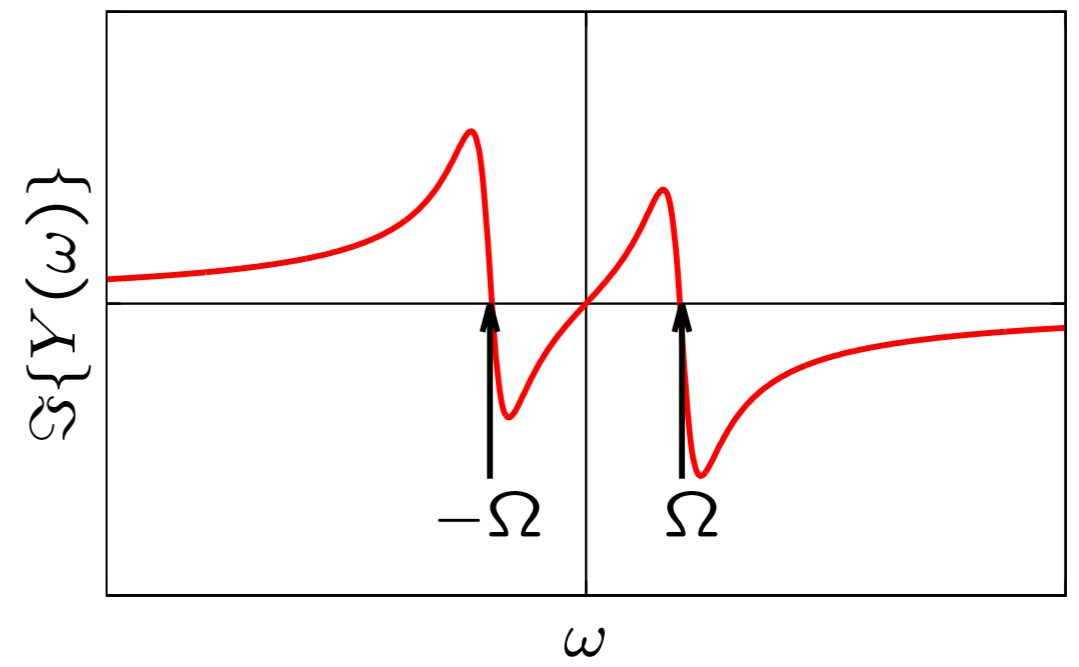
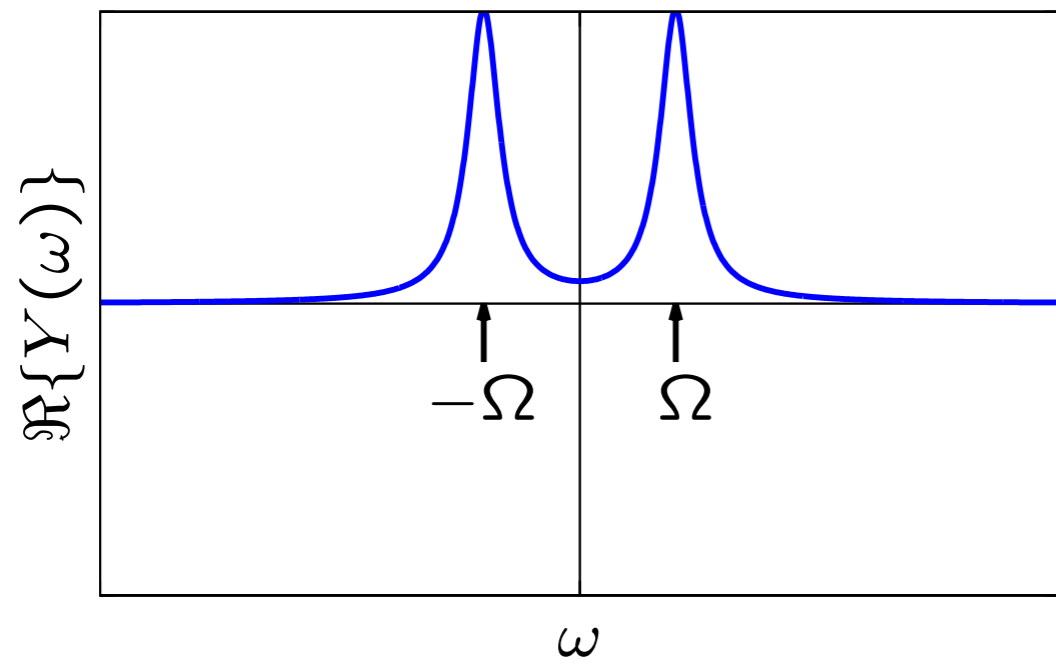
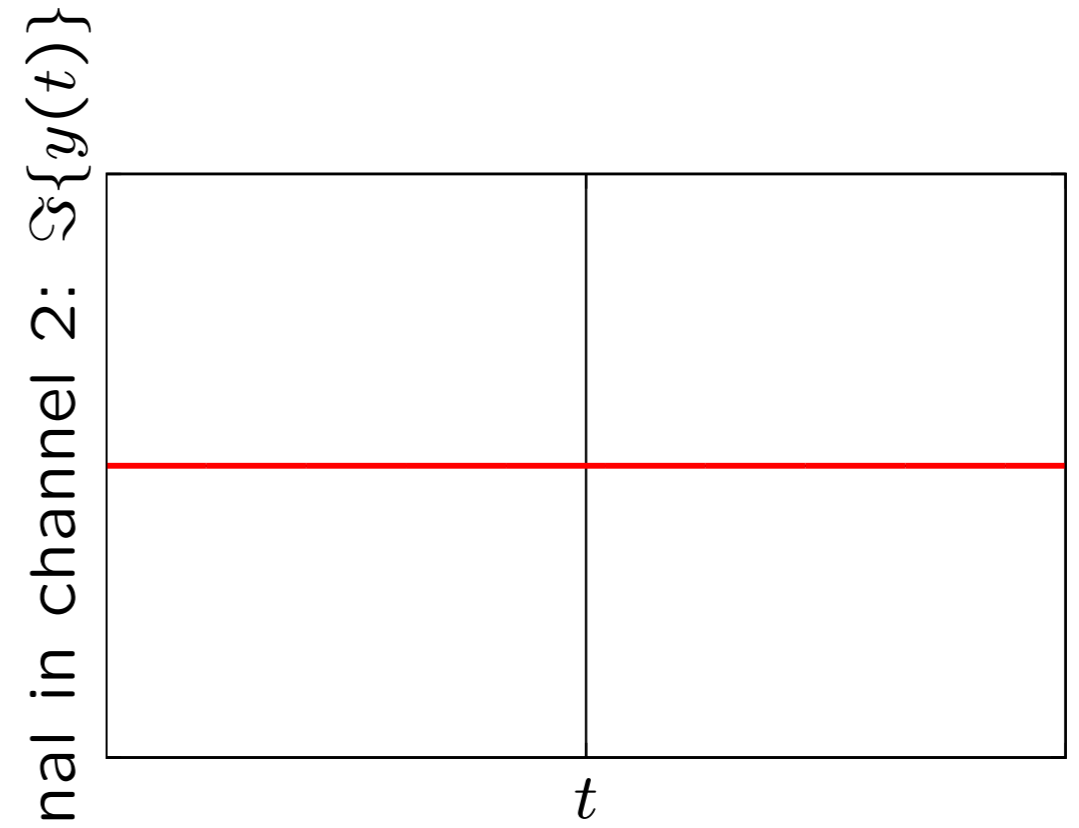
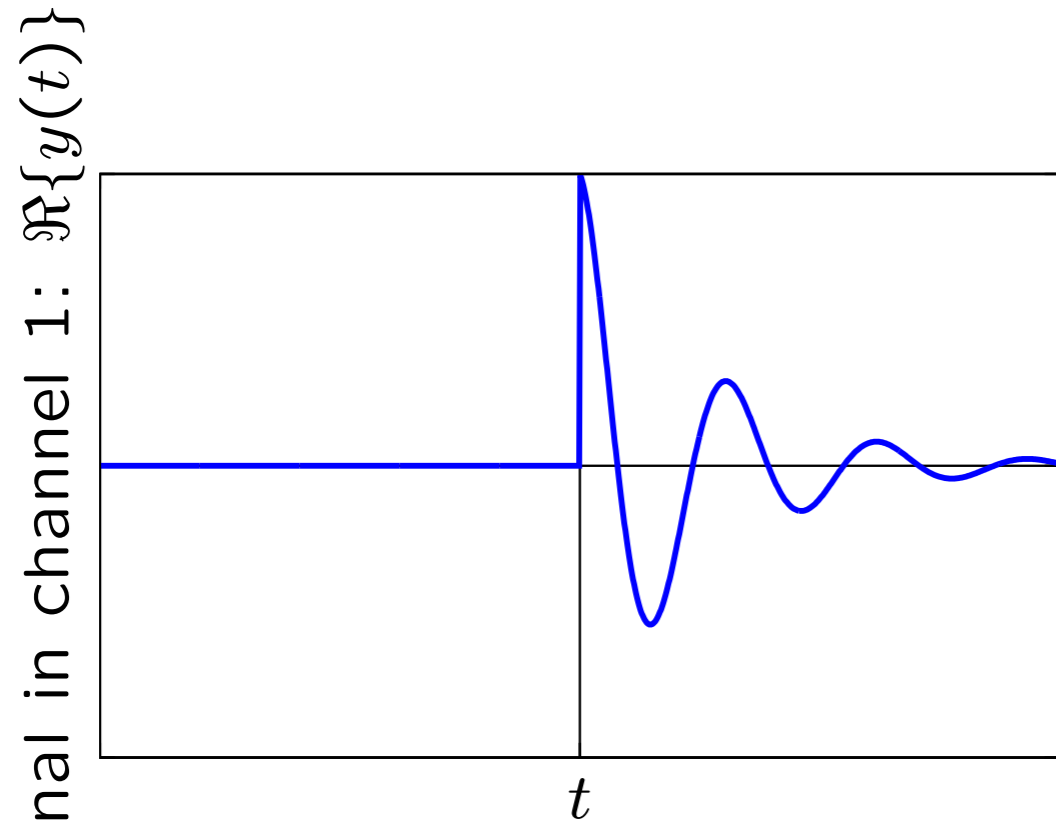
How many frequencies?



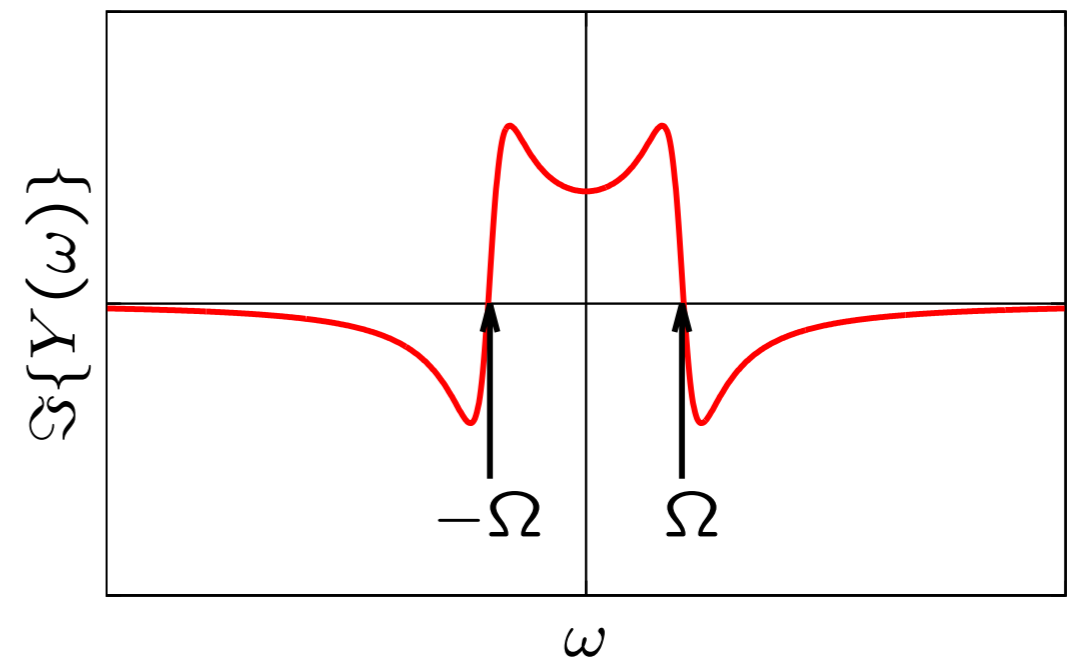
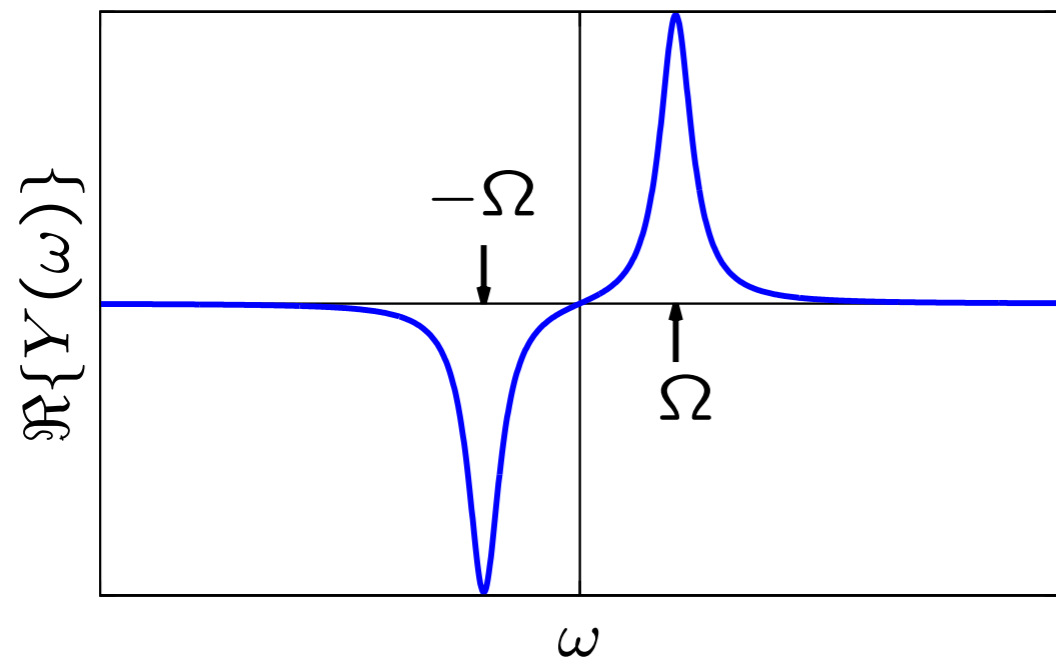
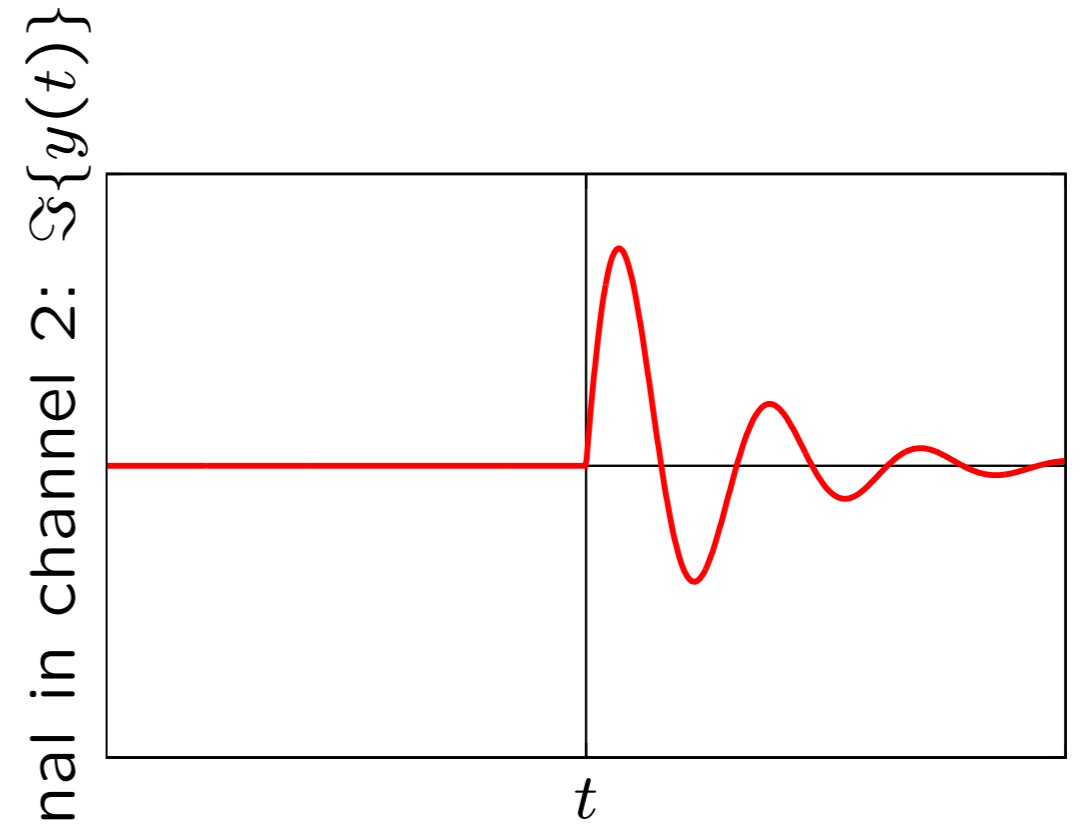
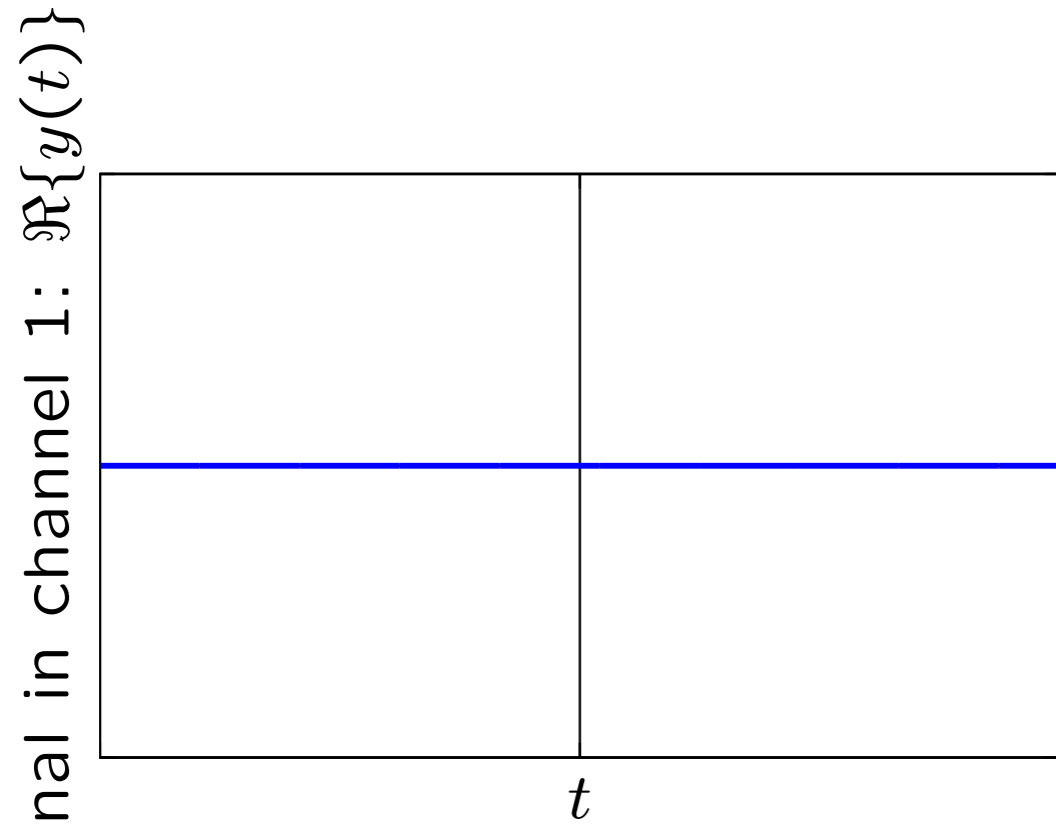
How many frequencies?



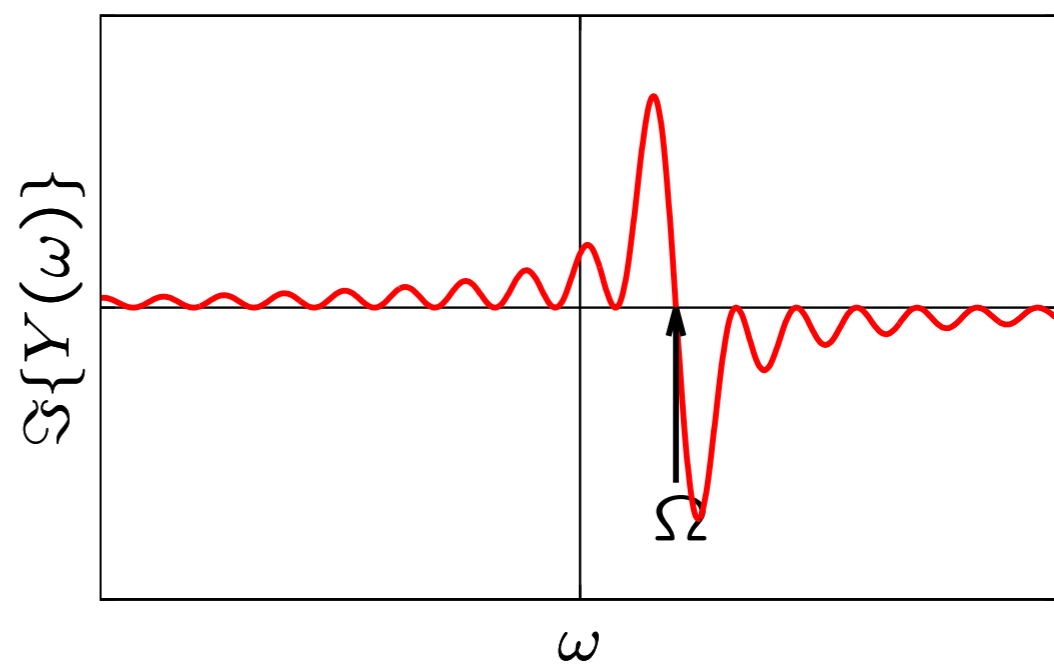
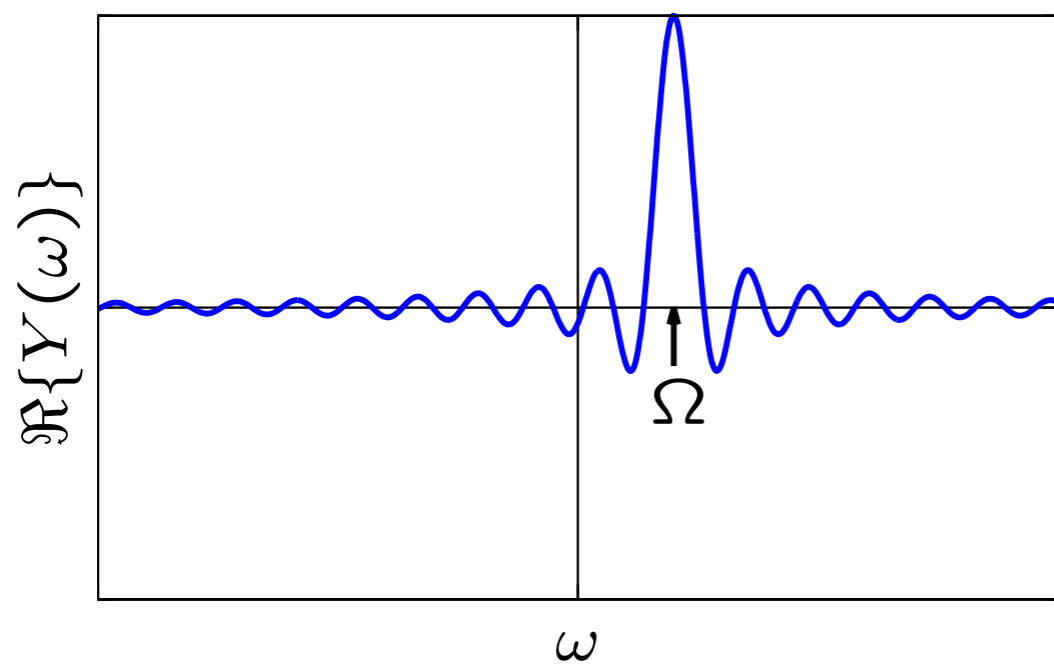
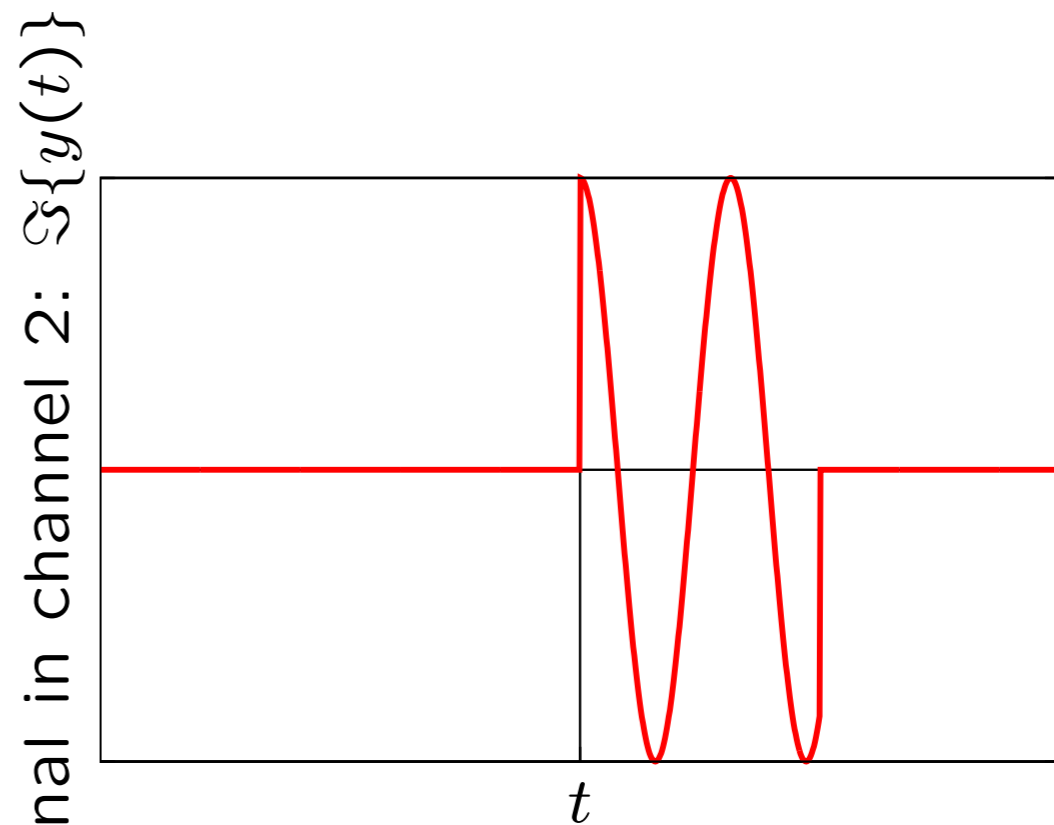
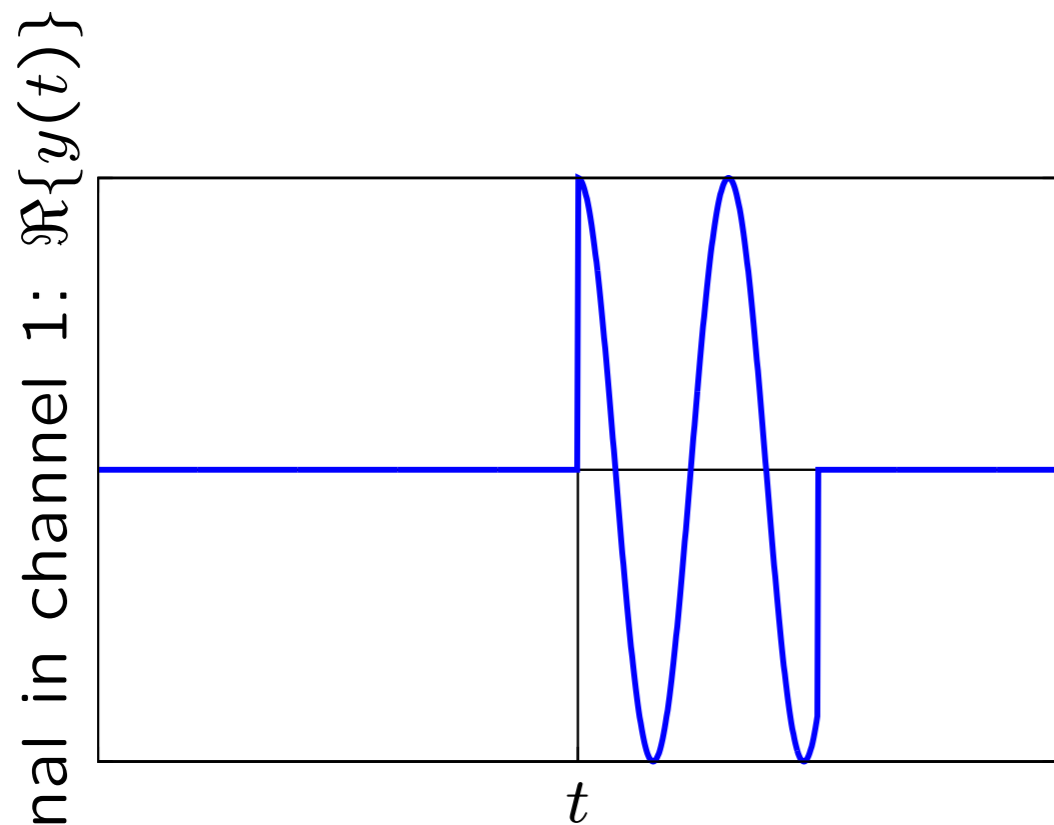
One channel, cosine Fourier transformation



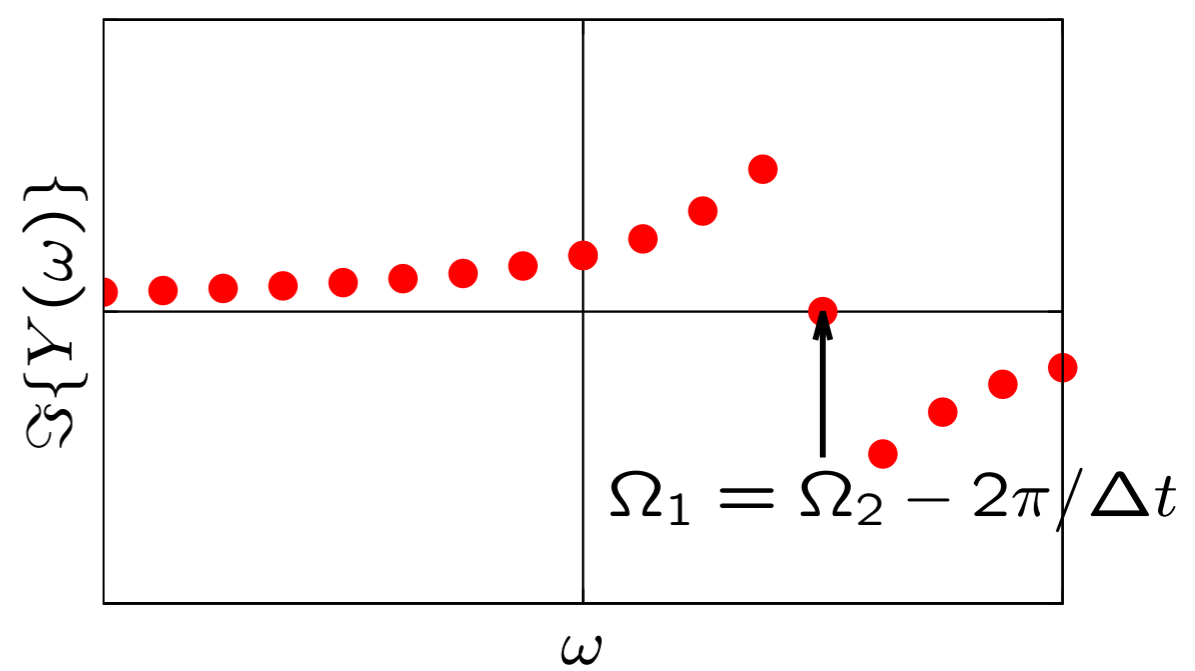
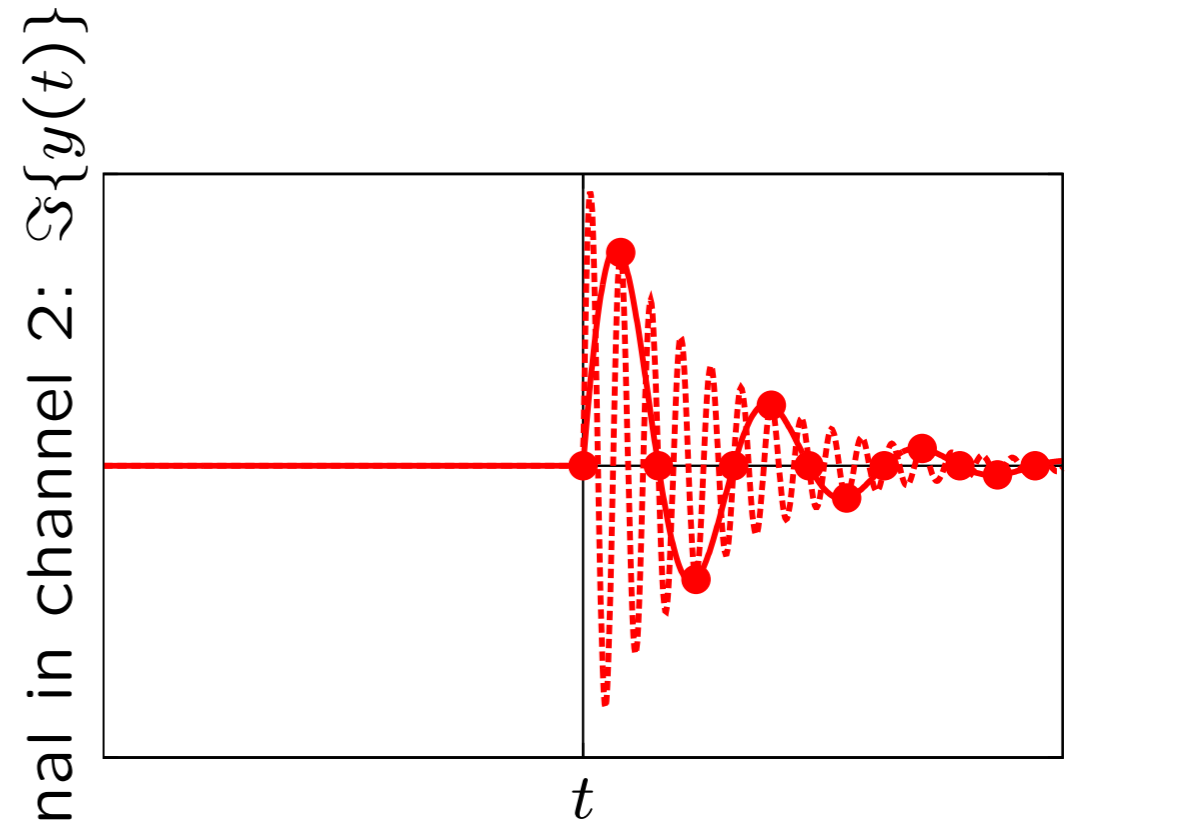
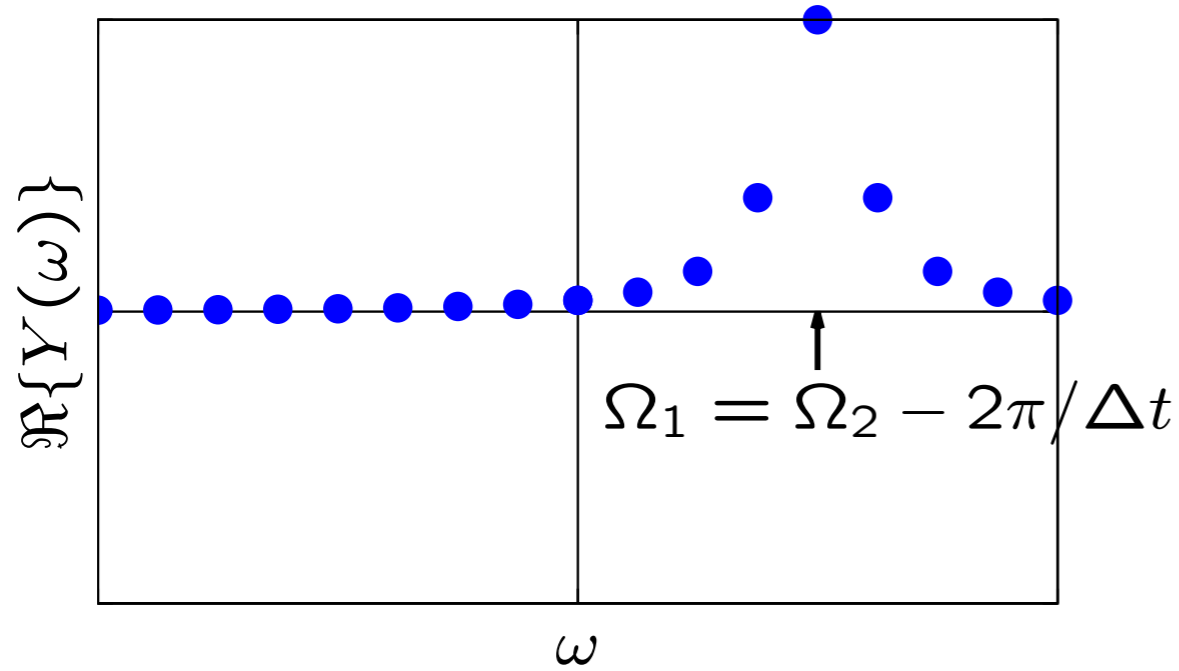
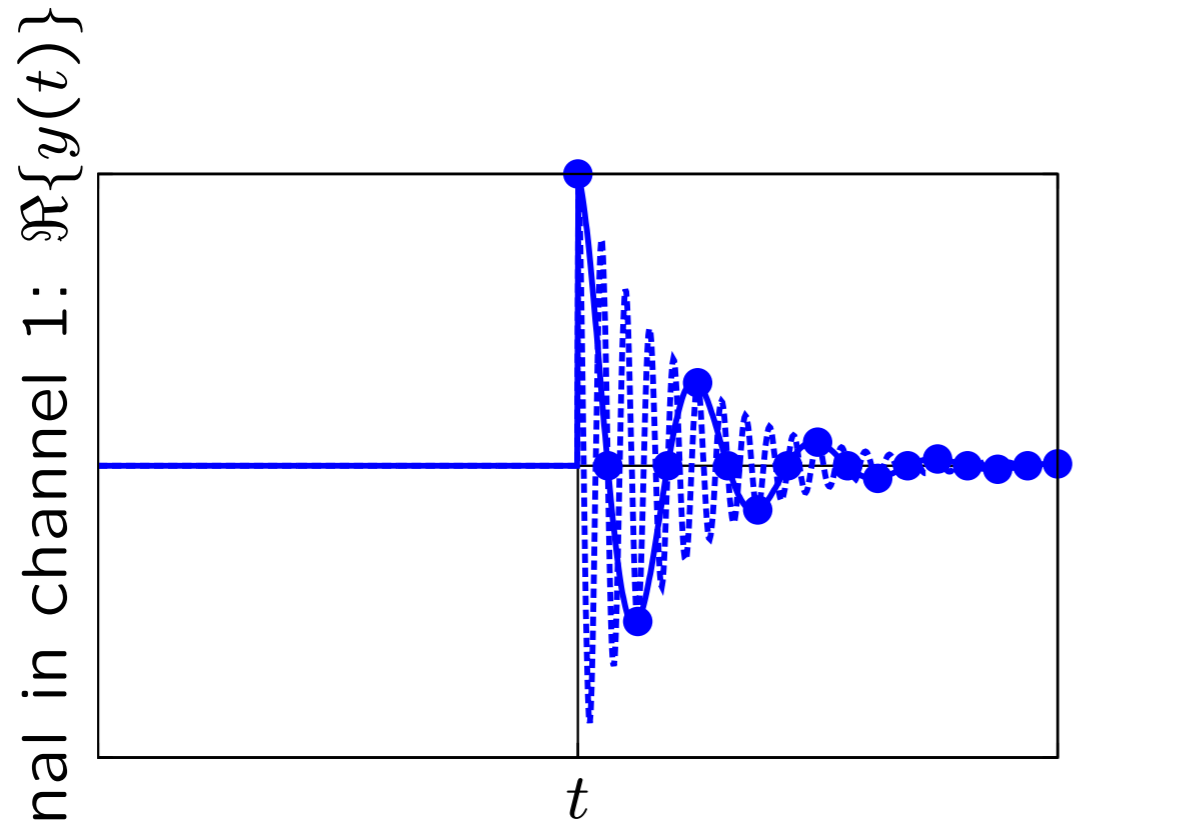
One channel, sine Fourier transformation



Finite signal \longrightarrow Truncation artifacts



Discrete signal \longrightarrow Aliasing



Unknown phase \longrightarrow Phase correction needed

