- Assume the input process $X'(t)$ has a Fourier transform, so that

$$X'(t) = \sum_{i=-\infty}^{\infty} X'_i \, \psi_i(t).$$

- There is a one-to-one correspondence between $\{X'(t)\}$ and $\{X'_i\}$.
- Likewise, assume the output process $Y(t)$ can be written as

$$Y(t) = \sum_{i=-\infty}^{\infty} Y_i \, \psi_i(t).$$

- With these assumptions, the waveform channel can be regarded as a discrete-time channel defined at $t = \frac{i}{2W}$, with the ith input and output of the channel being X'_i and Y_i, respectively.