

## Matrix of Transforms

- We will learn about the following transforms in this class
  - Laplace Transform (LT)
  - Continuous time Fourier series (CTFS)
  - Continuous time Fourier transform (CTFT)
  - Z-transform (ZT)
  - Discrete Fourier Transform (DFT)
  - Discrete time Fourier transform (DTFT)
- For historical reasons, the DFT is a misnomer. This transform should be called the Discrete time Fourier series (DTFS).
- There is a well know algorithm for computing the DFT that is known as the Fast Fourier Transform or FFT.

The following table shows the properties of each transform. The transforms we will cover are shown in bold face.

|                 | Complex Freq. | Real Freq.  |              |
|-----------------|---------------|-------------|--------------|
|                 |               | Periodic    | Not Periodic |
| Continuous Time | LT            | <b>CTFS</b> | <b>CTFT</b>  |
| Discrete Time   | <b>ZT</b>     | <b>DFT</b>  | <b>DTFT</b>  |