# glossary

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# 1 Glossary

Notation and terms used in time series analysis.

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## 1.1 Notation

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**Series Characteristics**

- $X_t$ - the response variable.
- $x_t$ - the value of $X_t$ at a particular time $t$.
- $a_t$ - the series white noise.
- $\mu_t$ - the mean of all possible realizations of $X_t$ for a given $t$.
- $\sigma_t$ - the varaince of all possible realizations of $X_t$ for a given $t$.
- $\sigma_a$ - the white noise varaince of all possible realizations of $X_t$ for a given $t$.
- $\gamma_k$ - the autocovariance of $X_t$ for lag of $k$.
- $\rho_k$ - the autocorrelation of $X_t$ for lag of $k$.
- $S_x(f)$ - series spectral desnsity.

**Periodic Signals**

- $A$ - amplitude of the periodic signal.
- $f$ - frequency of a signal periodic signal.
- $\omega$ - angular frequency of a periodic signal.
- $\phi$ - phase shift of a periodic signal.

$$X_t = Acos\left(2\pi ft + \phi\right)$$

**Filtering**

- $H\left(B\right)$ - transfer function

**ARIMA Modeling**

- $\phi\left(B\right)$ - autoregressive polynomial.