tswge Quick Reference

Plotting

- `plotts.wge` - plot a realization
- `plotts.sample.wge` - 4 sample plots (realization, parzen window, periodogram, spectral density)
- `plotts.parzen.wge` - parzen window (can be truncated)
- `plotts.true.wge` - true ACF and true spectral density

Factor Analysis

- `factor.wge` - factor characteristic equations into 1st and 2nd order components
- `factor.comp.wge` - decompose a sampled signal into factors
- `mult.wge` - multiply together factors (up to 6)
  - Use `$model.coef` to access the coefficients

Simulation

- `gen.sigplusnoise.wge` - linear or sinusiod signal with normal noise
  - Linear model: `b0, b1`
  - Sinusiod: `coef, freq, psi` (2 component vectors)
  - AR noise: `phi`
- `gen.arma.wge` - arma signals
  - `p`: AR vector
  - `q` MA vector
- `gen.arima.wge` - arima signals
  - `p`: AR vector
  - `q`: MA vector
  - `d`: Difference order
- `gen.aruma.wge` - aruma signals
  - `p`: AR vector
  - `q`: MA vector
  - `d`: Difference order
  - `s`: Seasonality
  - `lambda`: Other non-stationary components

Forecast

- `fore.arma.wge` - forecast arma signals
  - `x`: The series
  - `theta`: MA vector
  - `phi`: AR vector
  - `n.ahead`: Number of forecast steps
  - `lastn`: Use last `n.ahead` values to validate forecast
- `fore.aruma.wge` - forecast aruma signals
  - `x`: The series
  - `theta`: MA vector
  - `phi`: AR vector
  - `d`: Number of difference factors
  - `s`: Seasonality factor
  - `n.ahead`: Number of forecast steps
  - `lastn`: Use last `n.ahead` values to validate forecast

Model Fitting

- `aic5.wge` - fit models for given orders and return top 5
  - `x`: The series
  - `p`: Vector of orders
  - `q`: Vector of orders
  - `type`: Penalty { `'AIC'` (default), `'AICC'`, `'BIC'` }
- `est.ar.wge` - fit an AR model
  - `x`: The series
  - `p`: AR model to fit
  - `type`: Fit method { `'mle'` (default), `'burg'`, `'yw'` }
- `est.arma.wge` - fit an AR model
  - `x`: The series
  - `p`: AR order to fit
  - `q`: MA order to fit

Filtering

- `artrans.wge` - apply an AR-type transformation to a series
  - First order difference: `artrans.wge(x, phi.tr = 1)`
  - Subtract monthly difference: `artrans.wge(x, phi.tr = c(rep(0,11),1))`
- `butterworth.wge` - apply a butterworth filter a time series
- `stats::filter` - general function for filtering e.g. 5-pt MA Filter: `stats::filter(X_t, rep(1,5)/5)`