STGraph - User-defined functions

[Version 23.2.16]

These functions are written in STEL and are stored in the files datafiles/*.stf in the archive stgraphfun.jar

Array functions

`countIf(v1,v2)`: vector containing the number of occurrences of elements of the vector `v2` in the vector `v1`

`filter(v,c)`: subvector of the vector `v` obtained by removing the elements of value `1` in the boolean vector `c`

`flatten(x)`: vector obtained by flattening the array `x`

`identity(x)`: identity matrix of `x` rows and columns

`isConstant(x)`: `true` if all elements of the array `x` are equal

`isIn(x,y)`: check whether the scalar `x` belongs to the array `y`

`isMatrix(x)`: `true` if `x` is a matrix

`isScalar(x)`: `true` if `x` is a scalar

`isVector(x)`: `true` if `x` is a vector

`lastDim(x)`: number of elements in the last (fastest) dimension of the array `x`

`lpad(v,x)`: vector of size `x` obtained from the vector `v` and left padding or trimming if required

`matrix(n1,n2,x)`: matrix of `n1` rows and `n2` columns, each element of value `x`

`numCols(m)`: number of columns of the matrix `m`

`numEl(x)`: number of elements in the array `x`

`numRows(m)`: number of rows of the matrix `m`

`prod(x,y)`: vector product of the matrices `x` and `y`

`select(v,c)`: subvector of the vector `v` whose elements satisfy the condition `c` (written as string, i.e., delimited by double quotes), which can contain the system variables `$1`, running over the vector elements, and `$i`, the corresponding index

`sumIf(v,c)`: conditional sum over the elements of the vector `v`, where the condition `c` (written as string, i.e., delimited by double quotes) can contain the system variables `$1`, running over the vector elements, and `$i`, the corresponding index

`vector(n,x)`: vector of `n` elements of value `x`

Mathematical functions

`abs(x)`: absolute value of `x`

`between(x,a1,a2)`: `true` if `x` is between `a1` and `a2`

`dec2nary(x,n)`: vector containing the number in `n`-ary format corresponding to natural number (in decimal format) `x`

`factorial(n)`: factorial product of `n`

`isEven(x)`: `true` if `x` is even

`isInt(x)`: `true` if `x` is integer

`isPos(x)`: `true` if `x` is strictly positive

`map3to2d(x,y)`: 2D vector obtained projecting the 3D vector `x` by means of the angular coefficients in the 2D vector `y`

`nary2dec(v,n)`: natural number (in decimal format) corresponding to the number in `n`-ary format in the vector `v`

`pos(x)`: `x` if `x` is positive, `0` otherwise

Statistical functions

`autocorrel(x,y)`: coefficient of linear autocorrelation of the vector `x` shifted of `y` elements

`correl(x,y)`: coefficient of linear correlation of the vectors `x` and `y`

`intercept(x,y)`: intercept of the least squares line for the vectors `x` and `y`

`kurtosis(x)`: kurtosis of the array `x`, computed along its last dimension

`mean(x)` or `mean(x,y)`: mean value of the array `x`, computed along its last dimension; it computes the arithmetic mean if `y` is not specified or is `=0`, the geometric mean if `y=1`, and the harmonic mean if `y=2`

`median(x)`: median of the array `x`

`percentile(x,y)`: `y`-th percentile of the array `x`

`range(x)`: range (i.e., max-min) of the array `x`

`rank(x,y)`: vector of position indexes of the vector `x`; if `y` is specified and is `!=0`, the average rank is assigned to ties

`sampleWithRep(x,y)`: vector of `y` elements obtained by sampling with repetition the vector `x`

`sampleWithoutRep(x,y)`: vector of `y` elements obtained by sampling without repetition the vector `x`

`skewness(x)`: skewness of the array `x`, computed along its last dimension

`slope(x,y)`: slope of the least squares line for the vectors `x` and `y`

`correl(x,y)`: coefficient of Spearman's rank correlation of the vectors `x` and `y`

`stdDev(x)`: standard deviation of the array `x`, computed along its last dimension