

# Package ‘mp’

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**Type** Package

**Title** Multidimensional Projection Techniques

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**Description** Implementation of multidimensional projection techniques

**License** GPL

**Depends** R (>= 1.8.0), svd

**Imports** Rcpp (>= 0.11.0)

**LinkingTo** Rcpp, RcppArmadillo

**NeedsCompilation** yes

**Repository** CRAN

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`forceScheme`*Force Scheme Projection*

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### Description

Creates a 2D representation of the data based on a dissimilarity matrix. A few modifications have been made in relation to the method described in the literature: shuffled indices are used to minimize the order dependency factor, only a fraction of delta is used for better stability and a tolerance factor was introduced as a second stop criterion.

### Usage

```
forceScheme(d, initial = NULL, max.it = 50, tol = 0, verbose = F)
```

### Arguments

<code>d</code>	A dissimilarity structure such as that returned by <code>dist</code> or a full symmetric matrix containing the dissimilarities.
<code>initial</code>	A initial 2D configuration (optional). A random configuration will be created when omitted.
<code>max.it</code>	The maximum number of iterations that the method will run.
<code>tol</code>	The tolerance for the accumulated error between iterations. Set it to 0 to guarantee it will run <code>max.it</code> times.
<code>verbose</code>	A flag that indicates if the progress should be printed.

### Value

The 2D representation of the data.

### References

Eduardo Tejada, Rosane Minghim, Luis Gustavo Nonato: On improved projection techniques to support visual exploration of multi-dimensional data sets. *Information Visualization* 2(4): 218-231 (2003)

### See Also

[dist](#) (stats) and [dist](#) (proxy) for `d` computation

### Examples

```
# Eurodist example
proj = forceScheme(eurodist)
plot(proj, type = "n", xlab = "", ylab = "", asp=1, axes=FALSE, main="")
text(proj, labels(eurodist), cex = 0.6)

# Iris example
```

```
proj = forceScheme(dist(iris[,1:4]))  
plot(proj, col=iris$Species)
```

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lamp

*Local Affine Multidimensional Projection*

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### Description

Creates a 2D representation of the data based on an initial projected sample.

### Usage

```
lamp(X, sample.indices = NULL, Ys = NULL)
```

### Arguments

X                    A data frame or matrix to be projected.  
sample.indices    The indices of data points in X considered as samples.  
Ys                    Initial 2D configuration of the data samples (will be ignored if sample.indices is NULL).

### Value

The 2D representation of the data.

### References

Joia, P.; Paulovich, F.V.; Coimbra, D.; Cuminato, J.A.; Nonato, L.G., "Local Affine Multidimensional Projection," Visualization and Computer Graphics, IEEE Transactions on , vol.17, no.12, pp.2563,2571, Dec. 2011

### Examples

```
# Iris example  
proj = lamp(iris[, 1:4])  
plot(proj, col = iris$Species)
```

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mp

*Multidimensional Projection Techniques*

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### Description

Implementation of multidimensional projection techniques

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