

Package: SEIR (via r-universe)

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Title Susceptible, Exposed, Infectious, Removed Model

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Description This is a simple model for the spread of a virus. It is the solution to a system of differential equations with plot methods to visualize the solution.

Depends R (>= 3.0.0)

Imports stats

Suggests knitr

License GPL (>= 2)

URL <https://codeberg.org/pchausse/SEIR>
<https://pchausse.r-universe.dev/SEIR>

BugReports <https://codeberg.org/pchausse/SEIR/issues>

NeedsCompilation yes

VignetteBuilder knitr

Repository <https://pchausse.r-universe.dev>

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plot	<i>The SEIR model plot method</i>
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Description

It is a plot method for seir objects.

Usage

```
## S3 method for class 'seir'
plot(x, which=c("acase", "tcase", "S", "E", "I", "R",
               "both", "rzero"), add=FALSE, bothAdd=list(), ...)
```

Arguments

x	object of class seir.
which	A choice of lines to plot.
add	Should we add the lines to an existing plot?
bothAdd	A list if argument to pass to the active case plot when add is set to TRUE
...	Other arguments to pass to the plot method.

print	<i>The SEIR model print method</i>
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Description

It is the print method for seir objects.

Usage

```
## S3 method for class 'seir'
print(x, digits=2, ...)
```

Arguments

x	Object of class seir
digits	Number of digits to print
...	Arguments to pass to other methods

SEIR

*The SEIR model for virus spread***Description**

The function that solves the SEIR system of differential equations.

Usage

```
SEIR(t, y, y0, c=0, sigma=1/5.2, gamma=1/18,
      r0=matrix(c(0,20,70,84,90,3,2.6,1.9,1,.5),ncol=2),
      type=c("Lin", "Const"))

solveSEIR(h=1e-2, T=180, c=0, y0=c(11e6, 40, 800, 0),
           sigma=1/5.2, gamma=1/18,
           r0=matrix(c(0,20,70,84,90,3,2.6,1.9,1,.5),ncol=2),
           type=c("Lin", "Const"))
```

Arguments

t	Time value to evaluate the derivatives.
y	The vector is variable of interest: S, E, I and R.
y0	Initial Values
sigma	Parameter.
gamma	Parameter.
c	Mutation Parameter
h	Step size for the RK4 method
T	Final t
r0	Matrix of breaking points for R-Zero. The first column is the time of the breaking points, and the second is the values of the R-zero.
type	Types of R-Zero function. The default is a linear interpolation and the second is a piecewise constant function.

Value

It returns an object of class "seir"

References

Wang, H., Wang, Z., Dong, Y. et al (2020), Phase-adjusted estimation of the number of Coronavirus Disease 2019 cases in Wuhan, China. *Cell Discov*, **6**, **10**.

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