

# Package ‘SIVCMTest’

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**Type** Package

**Title** Model Checks on Single-index Varying Coefficient Models with Functional Response

**Version** 1.0

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**Description** Model checking on single-index varying coefficient models with functional response.

**License** GPL (>= 2)

**Encoding** UTF-8

**Imports** Rcpp (>= 1.0.6), MASS, stats, nleqslv

**LinkingTo** Rcpp, RcppEigen

**NeedsCompilation** yes

**RoxygenNote** 7.3.2

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GenData.Sa	<i>Function for generating data</i>
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## Description

Generate data for Example 1(a) in "Model Checks on Single-index Varying Coefficient Models with Functional Response".

## Usage

```
GenData.Sa(n, m, a)
```

## Arguments

n	sample size
m	number of time points
a	distance away from the null

**Value**

A list of outputs

x	covariates (n*p matrix)
ally	response functions (n*m matrix)
tm	time points (m vector)
beta	true coefficient functions (p*m matrix)

**Examples**

```
##---- Generate data ----
n <- 30
m <- 15
a <- 0
GenData.Sa(n,m,a)
```

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SIVCMTest	<i>Model checking test for single-index varying coefficient models (SIVCM) with functional response</i>
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**Description**

test whether the SIVCM with functional response is adequate or not

**Usage**

```
SIVCMTest(n, p, m, tm, x, ally, B)
```

**Arguments**

n	sample size
p	dimension of covariates x
m	number of time points
tm	time points
x	covariates (n*p matrix)
ally	response functions (n*m matrix)
B	number of bootstrap replications

**Value**

A list of outputs

TestStat	test statistic
Pvalue	p-value
Cri95	critical value at significance level 0.05

**Examples**

```
##---- Step 1: generate data ----  
n <- 30  
m <- 15  
a <- 0  
p <- 3  
B <- 500  
  
data <- GenData.Sa(n,m,a)  
x <- data$x # n*p  
ally <- data$ally # n*m  
beta <- data$beta # p*m  
tm <- data$tm  
  
##---- Step 2: model test ----  
SIVCMTest(n,p,m,tm,x,ally,B)
```

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