Package: RFIF (via r-universe)

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Type Package

Title Fast Iterative Filtering (FIF) with Portable FFT Backend

Version 1.0.2

Description Provides an R interface to a C implementation of Fast Iterative Filtering (FIF) for decomposing a univariate signal into intrinsic mode functions (IMFs) and a residual. The package uses Fast Fourier Transform library FFTW, if found. If not, it provides instructions to install it for your OS. This is recommended, as R's internal fft(), while avoiding external FFT dependencies, is two orders of magnitude slower. See vignette 'Installing FFTW for RFIF' for RFIF installation instructions.

Suggests testthat (>= 3.0.0), knitr, rmarkdown

Config/testthat/edition 3

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Encoding UTF-8

VignetteBuilder knitr

URL https://github.com/ChuckColeman/RFIF

BugReports https://github.com/ChuckColeman/RFIF/issues

NeedsCompilation yes

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Contents

rfif 2

Index **3**

`rfif` *Fast Iterative Filtering (C backend)*

Description

Decompose a univariate signal into Intrinsic Mode Functions (IMFs) using the vendored C implementation of Fast Iterative Filtering (FIF).

Usage

```
rfif(x)
```

Arguments

`x`	Numeric vector (signal).

Value

A list with components:

- `imfs`: numeric matrix with one IMF per row (rows = IMFs; columns = time).
- `residual`: numeric vector of length `length(x)`.
- `nimf`: integer number of IMFs.

Examples

```
t <- seq(0, 1, length.out = 1024)
x <- sin(2*pi*5*t) + 0.5*sin(2*pi*20*t)
res <- rfif(x)
recon <- if (res$nimf > 0) colSums(res$imfs) + res$residual else res$residual
max(abs(x - recon))
```

Index

rfif, 2