Keywords: noise removal, VMD, HD, 1D signal

A graph with a blue line

Description automatically generated

A graph with blue lines

Description automatically generated

A group of graphs of a function

Description automatically generated

A graph with numbers and lines

Description automatically generated

A graph with red and blue lines

Description automatically generated

Calculate the theta:

theta = 1.1216

**hdi = 1**

A graph of a graph

Description automatically generated

A graph with lines and numbers

Description automatically generated

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Conclusion:

The paper proposes a noise-removing method using VMD and HD. The steps of VMD-HD included:

* Getting BLIMF from noisy signal
* Calculate pdf of BLIMF
* Calculate the distance of BLIMF to noisy signal by using HD method
* Calculate the absolute slope of 2 near HD and get the filtered signal by summing the one that has the max slope to the 1st BLIMF.

The reason for using HD is it is more sensitive to the outlier than the l2-norm.

The author also compares the results with 2 other methods: EMD-HD and EMD-SC.