# Article information:

基于PCA最优阈值选取的挖掘机主泵载荷谱外推研究 - 中国知网
[https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C45S0n9fL2suRadTyEVl2pW9UrhTDCdPD65uwCmyjh4xAVZ8Fd9yAC8YD3o68H36GqihAnitvXQuPXfcjN2YvEg2=NZKPT](https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C45S0n9fL2suRadTyEVl2pW9UrhTDCdPD65uwCmyjh4xAVZ8Fd9yAC8YD3o68H36GqihAnitvXQuPXfcjN2YvEg2&uniplatform=NZKPT)

# Article summary:

1. A multi-criteria threshold selection method based on principal component analysis is proposed to address the problem of high sensitivity and low accuracy in time domain extrapolation.

2. Pressure wireless test system is used to collect load data under continuous operation of hydraulic excavator, and optimal threshold is selected based on various test criteria and principal component analysis.

3. The correlation coefficient between the fitting result and the over-threshold data is greater than 0.995, and the amplitude correlation coefficient between the one-time extrapolated data and the original data is 0.987.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Research on Extrapolation of Load Spectrum of Main Pump for Excavator Based on Optimal Threshold Selection Based on PCA” provides a comprehensive overview of a multi-criteria threshold selection method based on principal component analysis for time domain extrapolation. The article presents a clear methodology for collecting load data from a hydraulic excavator under continuous operation, selecting an optimal threshold based on various test criteria and principal component analysis, extracting over-threshold data, fitting it with GPD distribution, generating random data according to GPD distribution to replace over-threshold data for time domain extrapolation, and analyzing frequency characteristics of one-time extrapolated data compared to original data.

The article appears to be reliable as it provides detailed information about its research methods and results, including diagrams that illustrate its findings. Furthermore, it cites relevant sources such as Generalized Pareto Distribution (GPD) which adds credibility to its claims. Additionally, it also mentions funding sources which suggests that the research was conducted in an ethical manner with appropriate resources allocated towards it.

However, there are some potential biases in the article that should be noted. For example, while the article does mention funding sources for its research project, it does not provide any information about potential conflicts of interest or other external factors that may have influenced its findings or conclusions. Additionally, while the article does present both sides of an argument regarding time domain extrapolation thresholds, it does not explore counterarguments or present evidence for any opposing views which could lead readers to draw biased conclusions from its content.

# Topics for further research:

* Conflict of Interest in Research
* Time Domain Extrapolation Thresholds
* Principal Component Analysis
* Generalized Pareto Distribution
* Hydraulic Excavator Load Data
* Random Data Generation for Extrapolation

# Report location:

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