# Article information:

Anti-noise performance of the pulse coupled neural network applied in discrimination of neutron and gamma-ray | SpringerLink
<https://link.springer.com/article/10.1007/s41365-022-01054-6>

# Article summary:

1. Neutron detection is important in many fields, but it is difficult to differentiate the signal coming from neutrons or gamma-rays.

2. Pulse-shape discrimination (PSD) was developed to distinguish these signals, but most organic scintillators exhibit similar decay characteristics.

3. Liu et al. proposed a pulse-coupled neural network (PCNN)-based discrimination method which exhibits a remarkable discrimination effect when applied to n−γ PS data acquired for a plastic scintillator.

# 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 “Anti-noise performance of the pulse coupled neural network applied in discrimination of neutron and gamma-ray” provides an overview of the development of pulse-shape discrimination (PSD) techniques for distinguishing between neutron and gamma-ray signals. The authors discuss the advantages of using plastic scintillators over liquid and crystal scintillators, as well as the limitations of existing PSD methods such as charge comparison and zero crossing methods when used with plastic scintillators. They then present their own PCNN-based discrimination method which they claim has superior performance compared to other methods when used with plastic scintillators.

The article is generally reliable and trustworthy, providing evidence for its claims through references to relevant studies and experiments conducted by the authors themselves. The authors also provide an overview of different PSD methods, discussing their advantages and disadvantages in detail, which helps readers understand why their own PCNN method is preferable in certain scenarios. Furthermore, they provide detailed information on their experimental design and results, allowing readers to evaluate the effectiveness of their proposed method for themselves.

However, there are some potential biases that should be noted in this article. For example, while the authors do mention some potential drawbacks of using plastic scintillators such as limited discrimination capabilities compared to liquid or crystal scintillators, they do not explore any potential benefits that could make them preferable in certain scenarios such as cost control or convenience of transformation. Additionally, while they do discuss other PSD methods such as charge comparison and zero crossing methods, they do not provide any counterarguments against them or explore any possible improvements that could be made to them; instead they focus solely on promoting their own PCNN method without considering alternative solutions or approaches that could be taken instead.

In conclusion, this article provides a comprehensive overview of PSD techniques for distinguishing between neutron and gamma-ray signals with an emphasis on the PCNN method proposed by Liu et al., providing evidence for its claims through references to relevant studies and experiments conducted by the authors themselves. However, there are some potential biases that should be noted such as lack of exploration into potential benefits of using plastic scintillators over liquid or crystal ones or lack of consideration for alternative solutions or approaches that could be taken instead of solely focusing on promoting their own PCNN method without considering alternatives

# Topics for further research:

* Advantages of plastic scintillators
* Charge comparison PSD method
* Zero crossing PSD method
* Alternative PSD methods
* Improvements to existing PSD methods
* Cost control of plastic scintillators

# Report location:

<https://www.fullpicture.app/item/8ae55e967889d0ca6abde537394e6e57>