# Article information:

Full article: Modified Kalman filter-based model predictive control for ship heading control with probabilistic constraints  
<https://www.tandfonline.com/doi/full/10.1080/21642583.2021.1873870>

# Article summary:

1. Model Predictive Control (MPC) is a popular control method used for advanced control in multivariable systems, which can anticipate future unwanted situations at an early stage by considering all available information.

2. Classical MPC is designed for deterministic systems, but recently it has been applied to stochastic systems by combining MPC and Kalman Filter or unscented Kalman filter for controller design of stochastic systems.

3. This work extends the results presented in previous studies by considering constraints on both lower and upper bounds of state variables in ship heading control with probabilistic constraints using modified Kalman filter-based model predictive control.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

作为一篇学术论文，该文章提供了对于船舶航向控制的模型预测控制方法的介绍和应用。然而，在阅读文章时，我们也可以发现一些潜在的偏见和问题。

首先，文章没有充分考虑到可能存在的风险和不确定性。尽管作者提到了将MPC应用于随机系统的研究，但是在具体应用中，并没有充分考虑到可能存在的风险和不确定性因素。这可能会导致实际应用中出现意外情况或者无法达到预期效果。

其次，文章存在着片面报道和缺失考虑点的问题。作者只列举了几篇相关文献来说明MPC在船舶控制方面的应用，并未全面地讨论该领域内已有的研究成果。此外，在介绍MPC方法时，作者也未充分讨论其局限性和适用范围。

另外，文章中所提出主张缺乏证据支持。例如，在介绍MPC方法时，作者声称其优势在于能够预测未来可能出现的问题并及早采取措施。然而，并没有提供足够的数据或案例来证明这一点。

最后，文章存在着宣传内容和偏袒倾向。例如，在介绍MPC方法时，作者只强调其优点而忽略了其缺点；同时，在列举相关文献时也只选择了与自己观点相符合的部分而忽略了其他研究成果。

总之，尽管该文章提供了关于船舶控制方面新颖的研究思路和方法，但是其中存在着潜在偏见、片面报道、无根据主张等问题需要进一步完善和改进。

# Topics for further research:

* Risk and uncertainty in MPC application
* Comprehensive discussion of existing research in ship control
* Limitations and applicability of MPC method
* Lack of evidence to support claims
* Promotion and bias in the article
* Need for further improvement and refinement

# Report location:

<https://www.fullpicture.app/item/f5970f525eef60262c8cc877e45d4af4>