# Article information:

Phys. Rev. Lett. 125, 135501 (2020) - Activation Entropy as a Key Factor Controlling the Memory Effect in Glasses  
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.125.135501>

# Article summary:

1. Kovacs memory effect: The article discusses the Kovacs memory effect, which describes the behavior of glasses during isothermal annealing experiments. Unlike the common monotonic relaxation process, the enthalpy and volume of a preannealed glass first increase before decreasing towards equilibrium.

2. Activation entropy (S∗): The study focuses on a model Au-based metallic glass and determines the activation entropy (S∗) during isothermal annealing using absolute reaction rate theory. It is observed that the memory effect only appears when the second-annealing process has a large S∗.

3. Key factor for memory effect: The results suggest that a large value of S∗ is a key requirement for observing the memory effect in glasses. This finding provides a useful perspective for understanding the memory effect in both thermal and athermal systems.

# 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:

对于上述文章的详细批判性分析，需要先了解文章的内容和结论。根据摘要，这篇文章研究了金属玻璃中的Kovacs记忆效应，并发现只有当第二次退火过程具有较大的活化熵时，记忆效应才会出现。作者认为活化熵是观察记忆效应的关键要素。

然而，在没有阅读完整文章之前，很难对其进行全面的批判性分析。因此，在没有更多信息的情况下，我们无法确定该文章是否存在潜在偏见、片面报道、无根据的主张、缺失的考虑点、所提出主张的缺失证据、未探索的反驳、宣传内容等问题。

此外，我们也无法确定作者是否注意到可能存在的风险，并且是否平等地呈现了双方观点。要对一篇科学文章进行全面和准确的批判性分析，需要仔细阅读并评估其实验设计、数据分析方法、结果解释以及参考文献等方面。

因此，在没有更多信息和完整理解文章内容之前，我们无法提供对该文章潜在问题和偏见来源的具体见解。

# Topics for further research:

* Kovacs记忆效应
* 金属玻璃
* 第二次退火过程
* 活化熵
* 记忆效应的观察
* 科学文章的全面批判性分析

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