

Boundary Claim
On the Scope and Non-Extrapolability of Scale-Dependent Ordering Results
边界声明 (Boundary Statement)

本文及其补充说明所揭示的结果，**并不构成**对任何具体物理系统、自然系统或宇宙本体结构的直接解释。

本工作的核心结论仅限于如下层级：

在给定动力系统、观测投影与复杂性测度的前提下，
系统之间的复杂性排序一般不具有尺度不变性。

换言之，本研究所揭示的并非“系统在某一尺度上更复杂”，
而是：

复杂性比较这一操作本身，在尺度变化下并不守恒。

因此，任何试图将本文结果直接外推为：

宇宙在某一尺度上“最复杂”；

自然界存在“最优复杂性尺度”；

或系统本体具有某种尺度优先级排序；

的解读，均超出了本工作的适用范围。

The results presented in this work and its supplementary materials **do not constitute** a direct explanation of the intrinsic structure of any physical system, natural process, or the universe itself.

The core claim of this study is strictly limited to the following level:

**Given a dynamical system, an observational projection, and a complexity measure,
the ordering of system complexities generally fails to remain invariant across scales.**

In other words, what is demonstrated here is not that systems are more complex at certain scales, but that:

the act of comparing complexity itself does not remain conserved under scale transformation.

Accordingly, any interpretation that extrapolates these results to claims such as:

the universe being “most complex” at a particular scale;

the existence of a universally optimal complexity scale;

or an intrinsic scale-preference ordering of physical reality;

lies outside the valid scope of this work.

方法论补充说明 (Methodological Clarification)

本研究强调的是一种认识论与方法论层面的不变性破缺，而非本体论断言。

具体而言，本文展示的是：

在尺度变化下，复杂性排序这一描述性结构发生重构；

而非系统本身的动力学或物理属性发生改变。

这一结论解释的是：

为什么关于同一系统的复杂性叙述，在不同尺度与观测框架下不可避免地产生冲突。

而非：

系统为何“真实地”如此运作。

This work addresses an **epistemic and methodological form of non-invariance**, rather than an ontological claim.

Specifically, it demonstrates that:

under scale transformations, the descriptive structure of complexity ordering is reconfigured;

without implying any alteration in the underlying dynamics or physical reality of the system itself.

What is explained, therefore, is:

why complexity narratives about the same system inevitably diverge across scales and observational frameworks,

not how the system “truly” operates in an absolute sense.

结语（Closing Remark）

本研究的贡献不在于提供关于宇宙的终极解释，
而在于明确指出：

任何关于复杂性的比较性叙事，
若未显式标注尺度与观测算子，
在结构上即是不完备的。

这一边界并非限制理论野心，
而是防止其误入不可证伪的叙事领域。

The contribution of this work does not lie in offering an ultimate explanation of the universe, but in establishing that:

**any comparative narrative of complexity,
if not explicitly conditioned on scale and observational operators,
is structurally incomplete.**

This boundary is not a restriction of theoretical ambition,
but a safeguard against untestable extrapolation.