

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.