

Conformal Invariance Constraints in the Functional Renormalization Group

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1

Critical regime

Interactions occur at all scales.

2

Functional RG

Fluctuations are integrated scale by scale.

3

Derivative expansion

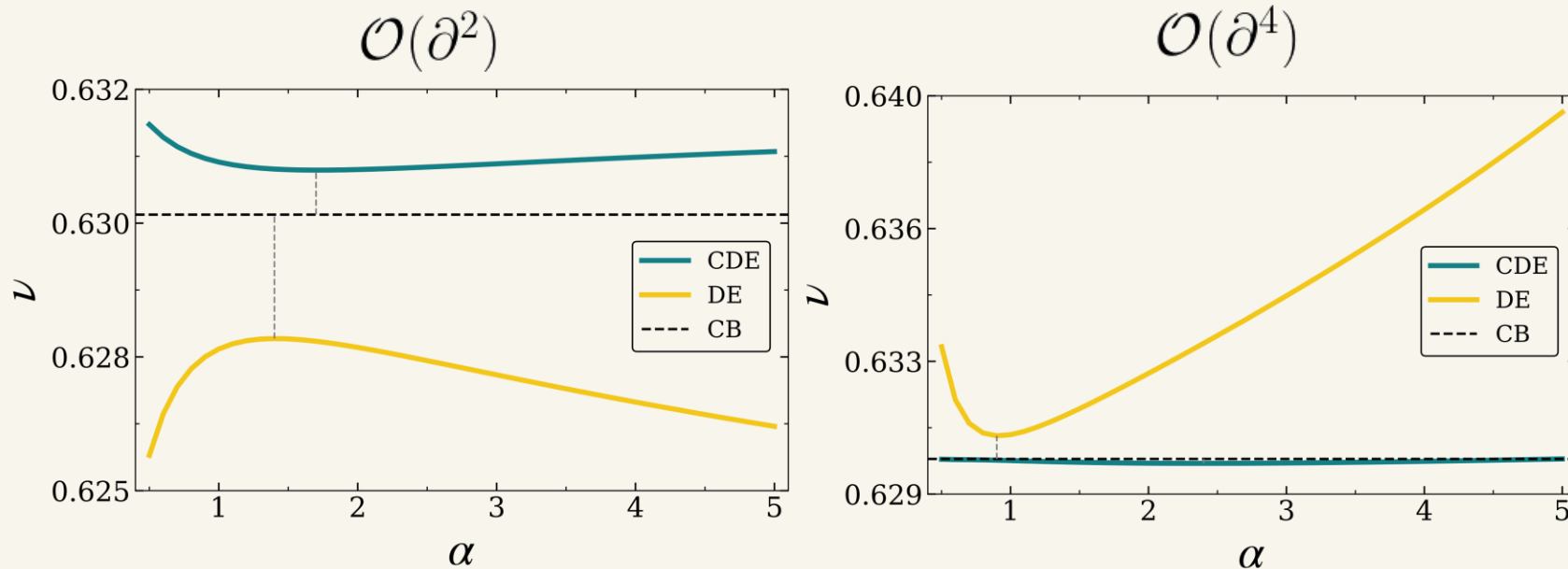
A practical truncation, but regulator dependent.

4

Conformal constraints

Scale and conformal symmetry are imposed at the fixed point.

CONFORMAL DERIVATIVE EXPANSION



$$\begin{array}{ccc} \text{DE} & & \text{CDE} \\ \boxed{\mathcal{D}\Gamma_k^{(n,m)} = 0} & \Rightarrow & \boxed{\begin{array}{l} \mathcal{D}\Gamma_k^{(n,m)} = 0 \\ \mathcal{C}_\mu \Gamma_k^{(n,m)} = 0 \end{array}} \\ n \leq N & & n + m \leq C \end{array}$$

- Improved critical-exponent accuracy
- Excellent regulator stability