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Universal quantities at high orders of the derivative expansion

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In the context of the Functional Renormalization Group, the Derivative Expansion is one of the most employed approximation schemes. In the last decade, this scheme has been pushed up to order $\mathcal{O}(\partial^6)$ for the Ising model universality class and to order $\mathcal{O}(\partial^4)$ for the O(N) models. This allowed us to comprehend better the properties and behaviour of this scheme and enabled the introduction of error bars for the computed quantities. As a consequence, in the last few years not only critical exponents but also universal amplitude ratios were computed with a precision and accuracy comparable with the most precise results in the literature and, in some cases, they are the reference results. In this talk I will discuss these recent results in view of the new developments of the derivative expansion.

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