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Operator product expansion coefficients from the nonperturbative functional renormalization group

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Using the nonperturbative functional renormalization group (FRG) within the Blaizot-Méndez-Galain-Wschebor approximation, we compute the operator product expansion (OPE) coefficient c_{112} associated with the operators $O_{1\sim\varphi}$ and $O_{2\sim\varphi^2}$ in the three-dimensional $O(N)$ universality class and in the Ising universality class ($N=1$) in dimensions $2 \leq d \leq 4$. When available, exact results and estimates from the conformal bootstrap and Monte-Carlo simulations compare extremely well to our results, while FRG is able to provide values across the whole range of d and N considered.

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