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Subleading conformal dimensions using a qubit regularization of the $O(4)$ model

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Computing conformal dimensions $D(j_L, j_R)$ of local fields that transform in an irreducible representation of $SU(2) \times SU(2)$ labeled with (j_L, j_R) at the $O(4)$ Wilson-Fisher fixed point has become interesting recently, especially when j_L, j_R become large. These calculations are challenging in the traditional lattice $O(4)$ model. We can overcome these difficulties by using a qubit regularized $O(4)$ model constructed with a local five dimensional Hilbert space. While previously we computed $D(j, j)$ using this approach, here we design an algorithm to compute $D(j, j - 1)$ for $2 \leq j \leq 20$.

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