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**Geometric entanglement for the toric code, color code and quantum double models** TZU-CHIEH WEI, C.N. Yang Institute for Theoretical Physics, Stony Brook University, ROMÁN ORÚS, Max-Planck-Institut für Quantenoptik, OLIVER BUERSCHAPER, Perimeter Institute for Theoretical Physics, MAARTEN VAN DEN NEST, Max-Planck-Institut für Quantenoptik — We use the geometric entanglement to characterize ground states in the toric code, color code and quantum double models. We find that the entanglement in all these cases scales with the system size plus a constant term. Such a constant contribution has a topological origin, characterized previously by the entanglement entropy. In particular, the constant term in the color code is twice that in the toric code, a result consistent with a recent study that the color code is equivalent to two copies of the toric code.

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