

- **Entanglement entropy of gauge fields**  
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It has been suggested that the entropy of black holes and other causal horizons is at least partly (and perhaps entirely) due to entanglement of the vacuum. For scalar and spinor fields, the black hole entropy at one loop can be interpreted as a sum of entanglement entropy and a term related to the Wald entropy. For gauge fields, a similar interpretation is possible only at the expense of adopting a gauge-variant expression for the Wald entropy, whose value is divergent and negative. We show that in two dimensions, when the topological sector is treated properly, the negative contribution disappears and is replaced by the positive entropy of the edge states. We comment on the generalization of these results to higher dimensions.