

# Holography for Higher Spin Gravity

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After a brief review of the original argument due to Maldacena for a holographic duality between IIB string theory on  $\text{AdS}_5 \times S^5$  and maximally supersymmetric Yang-Mills theory, we turn to the duality between the free  $O(N)$  vector model in 2+1 dimensions and higher spin gravity on  $\text{AdS}_4$ . For this theory we study the spectrum of single trace primaries of the CFT, which is dual to the spectrum of fields in higher spin gravity. By formulating the CFT in terms of bilocal variables, using the formalism of collective field theory, we demonstrate how the gravitational theory can be constructed. This example demonstrates a number of recently discovered phenomena in quantum gravity including the quantum error correction interpretation of holography, entanglement wedge reconstruction and the holography of information.

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