

# Looking at bulk points in general geometries

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The holographic correspondence predicts that certain strongly coupled quantum systems describe an emergent, higher-dimensional bulk spacetime in which excitations enjoy local dynamics. We consider a general holographic state dual to an asymptotically AdS bulk spacetime, and study boundary correlation functions of local fields integrated against wavepackets. We derive a factorization formula showing that when the wavepackets suitably meet at a common bulk point, the boundary correlators develop sharp features controlled by flat-space-like bulk scattering processes. These features extend along boundary hyperboloids whose shape naturally reveals the bulk geometry. We discuss different choices of operator ordering, which lead to inclusive and out-of-time-ordered amplitudes, as well as fields of various spins and masses.

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