Entanglement as geometry and flow

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I will present a connection between the area law for entanglement and geometry by representing the entanglement entropies corresponding to all $2^N$ bipartitions of an $N$-party pure quantum system by means of a generalized adjacency matrix. In the cases where the representation is exact, the elements of that matrix coincide with the mutual information between pairs of sites. In others, it provides a very good approximation, and in all the cases it yields a natural entanglement contour. In one-dimensional conformal invariant systems, the generalized adjacency matrix is given by the two-point correlator of an entanglement current operator. The proposal can be naturally generalized to higher dimensions.

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