Abstract: We consider the standard first-passage percolation model on \( \mathbb{Z}^d \), in which each edge is assigned an i.i.d. nonnegative weight, and the passage time between any two points is the smallest total weight of a nearest-neighbor path between them. This induces a random “disordered” geometry on the lattice. Our primary interest is in the empirical measures of edge-weights observed along geodesics in this geometry, say from 0 to \([n \xi]\), where \(\xi\) is a fixed unit vector. For various dense families of edge-weight distributions, we prove that these measures converge weakly to a deterministic limit as \(n\) tends to infinity. The key tool is a new variational formula for the time constant. In this talk, I will derive this formula and discuss its implications for the convergence of both empirical measures and lengths of geodesics.