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The asymptotic shape, large deviations and dynamical stability in first-passage percolation on cones

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This paper presents a three-fold extension of the Shape Theorem in first-passage percolation. Firstly, we show that the convergence holds not only almost surely and in L^1, but also completely. For this, we deduce certain large deviation estimates assuming finite power moments. Secondly, we prove that there are no exceptional times at which the almost sure convergence fails, when edges update their values according to independent Poisson clocks. Finally, we prove that all of the above extends to cone-like subgraphs of the $\mathbb{Z}^d$ lattice; Their associated asymptotic shapes can be expressed in terms of the asymptotic shape of the lattice.

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