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The Longest Minimum-weight Path in a Complete Graph

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We consider the minimum-weight path between any pair of nodes of the n -vertex complete graph in which the weights of the edges are i.i.d. exponentially distributed random variables. We show that the longest of these minimum-weight paths has about $c \log n$ edges where $c \approx 3.591$ is the unique solution of the equation $c \log c - c = 1$. This answers a question left open by Janson.

This is joint work with Louigi Addario–Berry and Nicolas Broutin.