Physics of string of information at high speeds, time complexity and time dilation AHMAD REZA ESTAKHR, Researcher — In computer science, the time complexity of an algorithm quantifies the amount of time taken by an algorithm to run as a function of the length of the string representing the input (1). According to Time dilation, two working clocks (one of them work natural and the other one work at speed of string) will report different times after different speeds. time of the clock that work at speed of string v_s is called proper time and its relation to natural time is $d\tau_s = dt\gamma^{-1}$ where the γ is Lorentz factor $\gamma = \frac{1}{\sqrt{1-\frac{v_s^2}{c^2}}}$, and where the speed of string is speed of light $d\tau_=0$, that which means there is no Time complexity from string viewpoint at speed of light, even in the worst-case time complexity. ref: 1. Sipser, Michael (2006). Introduction to the Theory of Computation. Course Technology Inc. ISBN 0-619-21764-2

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