Abstract

In this note the precise minimum number of key comparisons any dual-pivot quickselect algorithm (without sampling) needs on average is determined. The result is in the form of exact as well as asymptotic formulæ of this number of a comparison-optimal algorithm. It turns out that the main terms of these asymptotic expansions coincide with the main terms of the corresponding analysis of the classical quickselect, but still—as this was shown for Yaroslavskiy quickselect—more comparisons are needed in the dual-pivot variant. The results are obtained by solving a second order differential equation for the generating function obtained from a recursive approach.