

## Effect of electron screening in alpha decay

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The effect of the electron screening on the alpha decay rate of typical nuclei is considered. To this end, the adiabatical approach is exploited, which consecutively takes into account the adiabaticity of the motion of the alpha particle through the shells [1]. The effect is found to be of the order of one tenth to one hundredth of a percent for the considered representative nuclei. The method can be applied to description of nuclear reactions of synthesis, which take place in stellar plasma or at laboratory. The effect is expected to be much stronger in the nuclear reactions at small energies,  $\sim 30$  keV and lower.

TABLE I. Results for the relative change in half-periods in bare nuclides (last column).

Nuclide	Q (MeV)	T1/2	Y (%)
$^{144}\text{Nd}$	1.905	$2.29 \times 10^{15}$ yr	0.24
$^{214}\text{Rn}$	9.208	0.27 $\mu\text{s}$	0.02
$^{226}\text{Ra}$	4.871	1600 yr	0.23
$^{252}\text{Cf}$	6.217	2.645 yr	0.28
$^{241}\text{Es}$	8.320	9 s	0.12
$^{294}\text{118}$	11.81	0.89 ms	0.27

[1] F. F. Karpeshin, Phys. Rev. 2013, C87, 054319.

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