**NATURAL WIDTHS OF ATOMIC LEVELS IN THORIUM DETERMINED BY THE ICES METHOD**

A. Kovalík a,b, А.Kh. Inoyatov a,c, L.L. Perevoshchikov a, D.V. Filosofov a,   
J.A. Dadakhanov a,

a *JINR, Dubna, Russia,* b *NPI ASCR, Řež, Czechia,* c *NPI ASUzR, Ulugbek, Uzbekistan,*

The overwhelming majority of the experimental atomic-level widths in thorium (see, e.g., the compilation [1]) were determined by the X-ray emission spectroscopy and only several N-subshell values were obtained by the XPS method. There are no available relevant experimental data determined by another methods. Therefore, we used suitable conversion electron lines of the 9.2, 15.1 and 24.3 keV nuclear transitions in 227Th (generated in the ꞵ ̶  decay of 227Ac) measured in the works [2,3] for the determination of the M1, M2, M3, N1, N2, and N3 atomic-level widths using the approach and the computer code [4]. The values obtained are given in the table (in eV).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Atomic subshell | | | | | |
| M1 | M2 | M3 | N1 | N2 | N3 |
| This work | 14.1±0.5 | 11.4±0.5 | 6.9±0.4 | 11.4±1.4 | 8.6±1.2 | 6.0±0.7 |
| Ref. [1] | 15.5±2.0 | 13.2±(5÷25)% | 8±(5÷25)% | 11.5±(10%) | 8.8±0.8 | 7.5±1.0 |

As can be seen, the agreement within 2σ (or better) is found between the present and compilated data [1] and for the most of the atomic subshells in question our values are more precise. Thus, our data represent a valuable contribution to the database of the experimental natural atomic-level widths of thorium.

[1] J.L. Campbell, T. Papp, Atom. Data Nucl. Data Tables, 77 (2001) 1.

[2] A. Kovalík et al., Eur. Phys. J. A, 55 (2019) 131.

[3] A. Kovalík et al., Eur. Phys. J. A, 57 (2021) 285.

[4] A. Inoyatov et al., J. Elect. Spec. Relat. Phenom., 160 (2007) 54.