

YTTERBIUM ($\lambda \approx 467$ nm)

Absorbing ion $^{171}\text{Yb}^+$, $^2\text{S}_{1/2}$ ($F = 0$, $m_F = 0$) – $^2\text{F}_{7/2}$ ($F = 3$, $m_F = 0$) transition

1. CIPM recommended values

The values $f = 642\,121\,496\,772.3$ kHz
 $\lambda = 466\,878\,090.060\,7$ fm

with a relative standard uncertainty of 1.6×10^{-12} apply to the octupole transition after correction for the ac Stark shift and second-order Zeeman shift.

2. Source data

Adopted value $f = 642\,121\,496\,772.3$ (1.0) kHz $u_c/y = 1.6 \times 10^{-12}$
for which:
 $\lambda = 466\,878\,090.060\,7$ (7) fm $u_c/y = 1.6 \times 10^{-12}$

calculated from

f /kHz	u_c/y	source data
642 121 496 771.69	4.4×10^{-13}	[1]
642 121 496 772.69	2.5×10^{-13}	[1]
642 121 496 771.55	3.3×10^{-13}	[1]
Unweighted mean:	$f = 642\,121\,496\,772.3$ kHz	

Due to the range of values relative to the combination of individual uncertainties, the uncertainty was derived by treating the three results as a rectangular distribution leading to a value of 0.6 kHz (9.3×10^{-13}). In light of the fact that these measurements are from one laboratory only, the CCL considered it prudent to attribute a standard uncertainty of 1 kHz (1.6×10^{-12}).

3. References

[1] NPL Report CBTLM 28