RECOMMENDED VALUES OF STANDARD FREQUENCIES FOR APPLICATIONS INCLUDING THE PRACTICAL REALIZATION OF THE METRE AND SECONDARY REPRESENTATIONS OF THE DEFINITION OF THE SECOND

ALUMINIUM 27 ION \( (f \approx 1121 \text{ THz}) \)

\( ^{27}\text{Al}^+ \) ion, \( 3s^{2} \, ^{1}\text{S}_0 \rightarrow 3s3p \, ^{3}\text{P}_0 \) unperturbed optical transition

1. **Recommended value** [1] of the frequency

\[
 f^{(^{27}\text{Al}^+)} = 1\,210\,015\,393\,207\,857.3\,\text{Hz}
\]

equivalent to

\[
 \lambda^{(^{27}\text{Al}^+)} = 267\,429\,385.730\,489\,\text{fm},
\]

with an estimated relative standard uncertainty of \( 1.9 \times 10^{-15} \).

This radiation was endorsed as a secondary representation of the definition of the second.

2. **Source data**

\[
 f^{(^{27}\text{Al})} = 1\,210\,015\,393\,207\,857.3\,\text{Hz} \quad u_r / y = 1.9 \times 10^{-15}
\]

calculated from

<table>
<thead>
<tr>
<th>( f^{(^{27}\text{Al})} / \text{Hz} )</th>
<th>( u / \text{Hz} )</th>
<th>source data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,210,015,393,207,851</td>
<td>6</td>
<td>[2]</td>
</tr>
<tr>
<td>1,210,015,393,207,857.4</td>
<td>0.7</td>
<td>[3]</td>
</tr>
</tbody>
</table>

by a weighted mean.

As this value was issued from only one laboratory, the CCTF considered it prudent to estimate a relative standard uncertainty of \( 1.9 \times 10^{-15} \).

3. **References**

