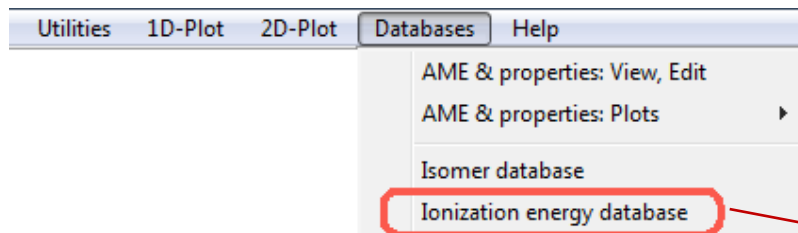
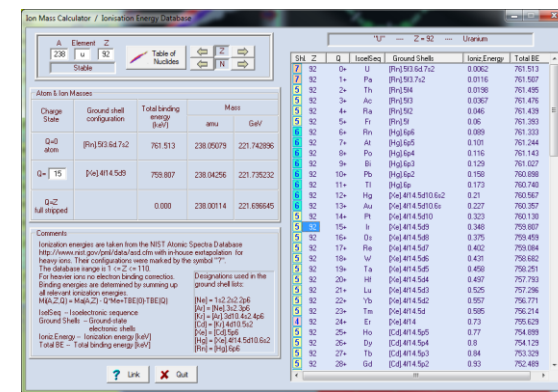
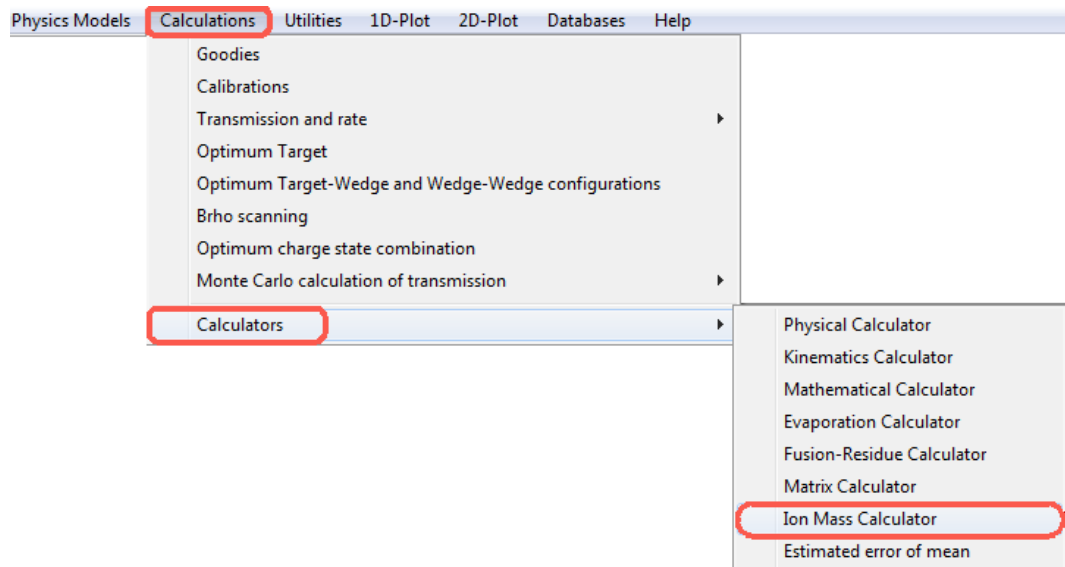


v.9.10.131
from 07/10/15

M.H. & H.W. requests



or



Ion Mass Calculator / Ionisation Energy Database
"U" Z = 92 Uranium

A
238

Element
u

Z
92

Stable

Table of Nuclides

← Z →

← N →

| Atom & Ion Masses | | | | |
|-------------------|----------------------------|----------------------------|-----------|------------|
| Charge State | Ground shell configuration | Total binding energy [keV] | Mass | |
| | | | amu | GeV |
| Q=0 atom | [Rn].5f3.6d.7s2 | 761.513 | 238.05079 | 221.742896 |
| Q= 7 | [Hg].6p5 | 761.244 | 238.04695 | 221.739319 |
| Q=Z full stripped | | 0.000 | 238.00114 | 221.696645 |

Comments

Ionization energies are taken from the NIST Atomic Spectra Database <http://www.nist.gov/pml/data/asd.cfm> with in-house extrapolation for heavy ions. Their configurations are marked by the symbol "?".
 The database range is $1 \leq Z \leq 110$.
 For heavier ions no electron binding corrections. Binding energies are determined by summing up all relevant ionization energies.

$M_i(A,Z,Q) = M_a(A,Z) - Q \cdot m_e + TBE(0) - TBE(Q)$

Designations used in the ground shell lists:

[Ne] = 1s2.2s2.2p6
 [Ar] = [Ne].3s2.3p6
 [Kr] = [Ar].3d10.4s2.4p6
 [Cd] = [Kr].4d10.5s2
 [Xe] = [Cd].5p6
 [Hg] = [Xe].4f14.5d10.6s2
 [Rn] = [Hg].6p6

IselSeq -- Isoelectronic sequence
 Ground Shells -- Ground-state electronic shells
 Ioniz.Energy -- Ionization energy [keV]
 Total BE -- Total binding energy [keV]

? Link

X Quit

| Shl. | Z | Q | IselSeq | Ground Shells | Ioniz_Energy | Total BE |
|------|----|-----|---------|--------------------|--------------|----------|
| 7 | 92 | 0+ | U | [Rn].5f3.6d.7s2 | 0.0062 | 761.513 |
| 7 | 92 | 1+ | Pa | [Rn].5f3.7s2 | 0.0116 | 761.507 |
| 5 | 92 | 2+ | Th | [Rn].5f4 | 0.0198 | 761.495 |
| 5 | 92 | 3+ | Ac | [Rn].5f3 | 0.0367 | 761.476 |
| 5 | 92 | 4+ | Ra | [Rn].5f2 | 0.046 | 761.439 |
| 5 | 92 | 5+ | Fr | [Rn].5f | 0.06 | 761.393 |
| 6 | 92 | 6+ | Rn | [Hg].6p6 | 0.089 | 761.333 |
| 6 | 92 | 7+ | At | [Hg].6p5 | 0.101 | 761.244 |
| 6 | 92 | 8+ | Po | [Hg].6p4 | 0.116 | 761.143 |
| 6 | 92 | 9+ | Bi | [Hg].6p3 | 0.129 | 761.027 |
| 6 | 92 | 10+ | Pb | [Hg].6p2 | 0.158 | 760.898 |
| 6 | 92 | 11+ | Tl | [Hg].6p | 0.173 | 760.740 |
| 6 | 92 | 12+ | Hg | [Xe].4f14.5d10.6s2 | 0.21 | 760.567 |
| 6 | 92 | 13+ | Au | [Xe].4f14.5d10.6s | 0.227 | 760.357 |
| 5 | 92 | 14+ | Pt | [Xe].4f14.5d10 | 0.323 | 760.130 |
| 5 | 92 | 15+ | Ir | [Xe].4f14.5d9 | 0.348 | 759.807 |
| 5 | 92 | 16+ | Os | [Xe].4f14.5d8 | 0.375 | 759.459 |
| 5 | 92 | 17+ | Re | [Xe].4f14.5d7 | 0.402 | 759.084 |
| 5 | 92 | 18+ | W | [Xe].4f14.5d6 | 0.431 | 758.682 |
| 5 | 92 | 19+ | Ta | [Xe].4f14.5d5 | 0.458 | 758.251 |
| 5 | 92 | 20+ | Hf | [Xe].4f14.5d4 | 0.497 | 757.793 |
| 5 | 92 | 21+ | Lu | [Xe].4f14.5d3 | 0.525 | 757.296 |
| 5 | 92 | 22+ | Yb | [Xe].4f14.5d2 | 0.557 | 756.771 |
| 5 | 92 | 23+ | Tm | [Xe].4f14.5d | 0.585 | 756.214 |
| 4 | 92 | 24+ | Er | [Xe].4f14 | 0.73 | 755.629 |
| 5 | 92 | 25+ | Ho | [Cd].4f14.5p5 | 0.77 | 754.899 |
| 5 | 92 | 26+ | Dy | [Cd].4f14.5p4 | 0.8 | 754.129 |
| 5 | 92 | 27+ | Tb | [Cd].4f14.5p3 | 0.84 | 753.329 |
| 5 | 92 | 28+ | Gd | [Cd].4f14.5p2 | 0.93 | 752.489 |

You can enter Q manually in the cell or click by mouse in the table

9.10.131 07/10/15

- Ion mass Calculator
- Ionization Energy Database
- Ion mass corrections on electron binding energy

v.9.8.114

238.0508 amu

Physical calculator v.9.8.117

| A | Element | Z | Q |
|-----|---------|----|----|
| 238 | U | 92 | 92 |

Stable Ion mass = 238.0003 amu

| | | | |
|----------|--------------------------------------|----------|---|
| Energy | <input type="radio"/> 99.9999 MeV/u | Energy | <input checked="" type="radio"/> 100 AMeV |
| Brho | <input type="radio"/> 3.8232 Tm | TKE | <input type="radio"/> 23800 MeV |
| Erho | <input type="radio"/> 492.983 MJ/C | Velocity | <input type="radio"/> 12.8769 cm/ns |
| P | <input type="radio"/> 105447 MeV/c | Beta | <input type="radio"/> 0.4295284 |
| p_trnspt | <input type="radio"/> 1.146168 GeV/c | Gamma | <input type="radio"/> 1.107354 |

Physical calculator v.9.10.131

| A | Element | Z | Q |
|-----|---------|----|----|
| 238 | U | 92 | 92 |

Stable Ion mass = 238.0011 amu

| | | | |
|----------|-------------------------------------|----------|---|
| Energy | <input type="radio"/> 99.9995 MeV/u | Energy | <input checked="" type="radio"/> 100 AMeV |
| Brho | <input type="radio"/> 3.82321 Tm | TKE | <input type="radio"/> 23800 MeV |
| Erho | <input type="radio"/> 492.983 MJ/C | Velocity | <input type="radio"/> 12.8769 cm/ns |
| P | <input type="radio"/> 105448 MeV/c | Beta | <input type="radio"/> 0.4295277 |
| p_trnspt | <input type="radio"/> 1.14617 GeV/c | Gamma | <input type="radio"/> 1.107354 |

The Check box to take into account electron binding energies for ion mass calculation in the code. For debug and comparison purpose. It is recommended to use.

Note: the Ionization energy database (Ion mass calculator) is always taking into account electron binding energies in spite of the production mechanism settings

