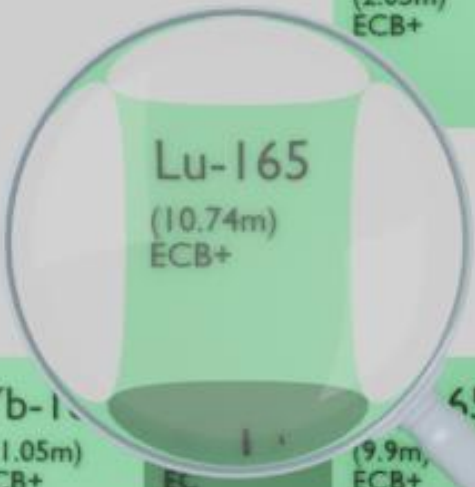




		Pr-167 (2.05m) ECB+		Pr-167 (3.24m) ECB+	Pr-170 (16.01h) EC
			Lu-165 (10.74m) ECB+	Lu-167 (51.5m) ECB+	Lu-169 (34.06h) ECB+
Yb-162 (18.87m) ECB+	Yb-163 (11.05m) ECB+	Yb-164 (9.9m) ECB+	Yb-165 (56.7h) EC	Yb-167 (17.5m) ECB+	Yb-168 (STABLE)

LUTETIUM-165

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Lu-165
Atomic number (Z): 71
Mass number (A): 165
Neutron number (N): 94

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 10.74 [m]
Decay constant: 1.0756×10^{-3} [1/s]
Daughters: Yb-165 (100.0%)
Radioactive daughters: Yb-165

DOSIMETRIC CONSTANTS

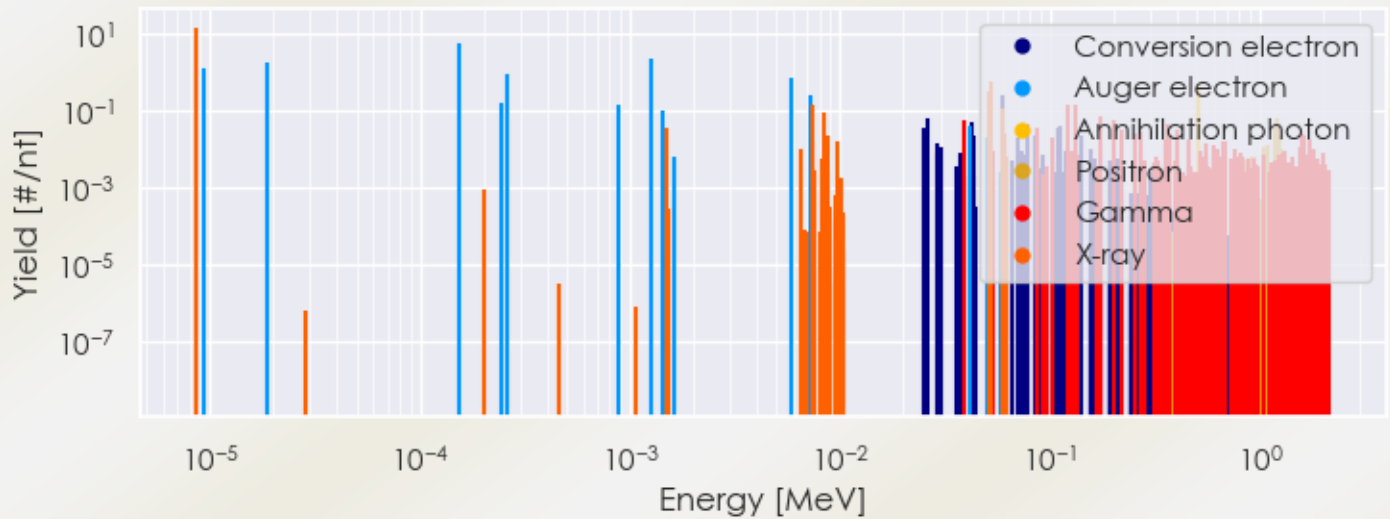
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.37506 [MeV]
Mean photon energy: 1.11023 [MeV]
Air kerma rate constant, Γ_{10} : 2.957×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.965×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.009×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e^-}$: 6.009×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.779×10^{-13} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

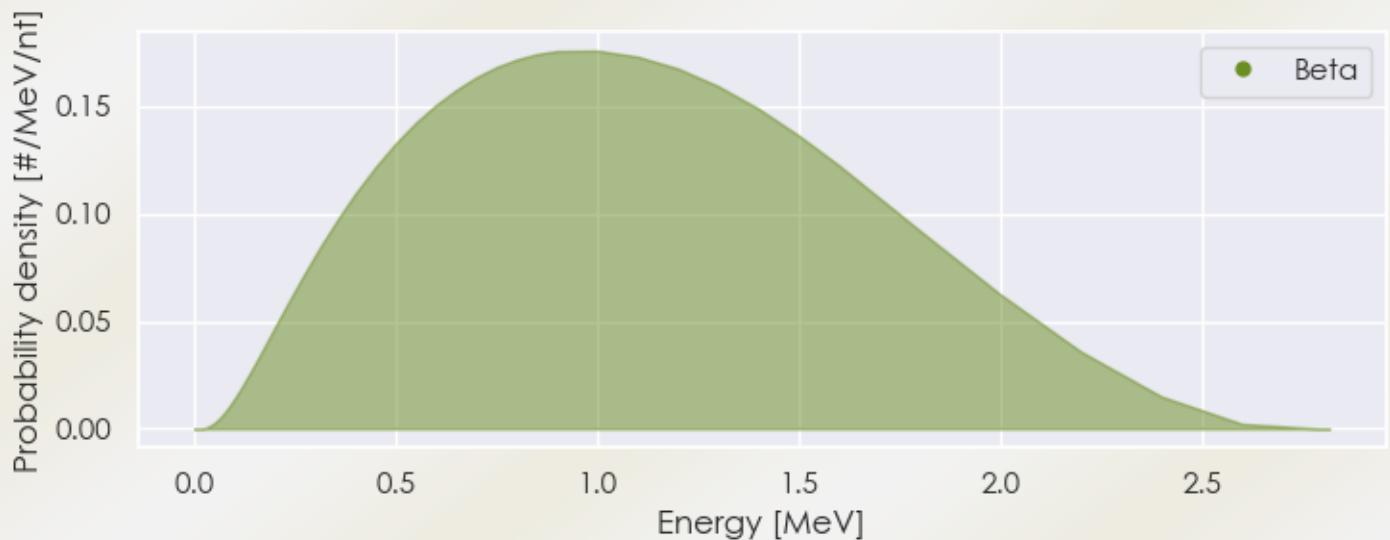
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Lu-165 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Lu-165%20Summary%20Spectrum.csv)

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: [www.mirdsoft.org/products/MIRDspecs/Lu-165 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Lu-165%20Beta%20Spectrum.csv)

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Lu-165 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Lu-165%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
8.63858e-06	1.488e+01	X-ray
1.50150e-03	3.674e-02	X-ray
7.35570e-03	1.547e-02	X-ray
7.40530e-03	1.366e-01	X-ray
8.41451e-03	9.062e-02	X-ray
8.74937e-03	2.331e-02	X-ray
9.79888e-03	1.615e-02	X-ray
3.92300e-02	5.355e-02	Gamma
5.14483e-02	3.178e-01	X-ray
5.25072e-02	5.601e-01	X-ray
5.92804e-02	5.903e-02	X-ray
5.95058e-02	1.141e-01	X-ray
6.10550e-02	1.313e-02	X-ray
6.11060e-02	2.540e-02	X-ray
8.75400e-02	3.450e-02	Gamma
1.03730e-01	1.890e-02	Gamma
1.20600e-01	1.500e-01	Gamma
1.32490e-01	1.500e-01	Gamma
1.74250e-01	7.050e-02	Gamma
2.03680e-01	5.700e-02	Gamma
2.17430e-01	3.000e-02	Gamma
2.53430e-01	2.430e-02	Gamma
2.71150e-01	2.970e-02	Gamma
3.56930e-01	1.800e-02	Gamma
3.56930e-01	1.200e-02	Gamma
3.61070e-01	4.395e-02	Gamma
3.72970e-01	1.920e-02	Gamma
4.00550e-01	3.000e-02	Gamma

4.00550e-01	3.000e-02	Gamma
4.58770e-01	1.860e-02	Gamma
4.58770e-01	1.860e-02	Gamma
5.11000e-01	5.207e-01	Annihilation photon
5.52070e-01	1.470e-02	Gamma
6.08980e-01	1.290e-02	Gamma
6.29890e-01	1.035e-02	Gamma
6.71070e-01	1.605e-02	Gamma
6.86540e-01	1.545e-02	Gamma
7.53550e-01	1.050e-02	Gamma
1.55986e+00	1.080e-02	Gamma
1.60143e+00	2.460e-02	Gamma
1.61346e+00	2.265e-02	Gamma
1.73413e+00	1.740e-02	Gamma
1.80134e+00	1.035e-02	Gamma
1.04738e+00	1.130e-02	Positron
1.07999e+00	1.233e-02	Positron
1.09621e+00	1.233e-02	Positron
1.18650e+00	3.700e-02	Positron
1.21626e+00	3.186e-02	Positron
1.21905e+00	6.063e-02	Positron
1.23957e+00	2.261e-02	Positron
1.26279e+00	1.028e-02	Positron
9.41893e-06	1.300e+00	Auger electron
1.88616e-05	1.842e+00	Auger electron
1.54789e-04	5.380e+00	Auger electron
2.46303e-04	1.628e-01	Auger electron
2.61454e-04	9.390e-01	Auger electron
8.82568e-04	1.482e-01	Auger electron
1.25666e-03	2.177e+00	Auger electron
1.42919e-03	9.819e-02	Auger electron
5.81338e-03	7.182e-01	Auger electron
7.30567e-03	2.589e-01	Auger electron
8.82850e-03	2.375e-02	Auger electron
2.52690e-02	3.568e-02	Conversion electron
2.60990e-02	6.134e-02	Conversion electron
2.87760e-02	1.452e-02	Conversion electron
3.02962e-02	1.107e-02	Conversion electron

4.19611e-02	3.836e-02	Auger electron
4.22890e-02	4.985e-02	Conversion electron
4.32060e-02	2.283e-02	Conversion electron
4.99512e-02	1.961e-02	Auger electron
5.91590e-02	2.523e-01	Conversion electron
6.04790e-02	1.048e-02	Conversion electron
7.10490e-02	2.037e-02	Conversion electron
7.75474e-02	4.494e-02	Conversion electron
7.86062e-02	4.403e-02	Conversion electron
8.56048e-02	2.368e-02	Conversion electron
1.10146e-01	3.497e-02	Conversion electron
1.12809e-01	3.891e-02	Conversion electron
1.42239e-01	2.241e-02	Conversion electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6