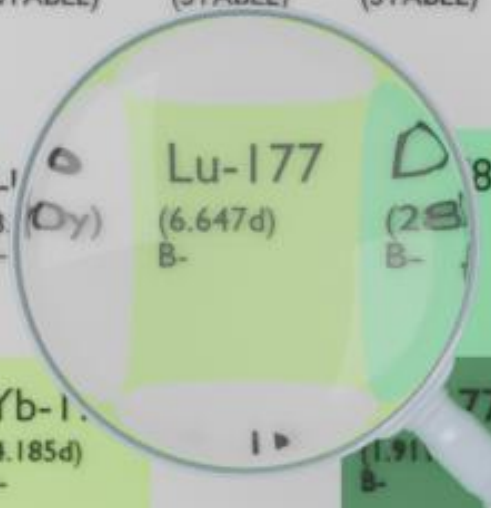




Lu-173 (1.37y) EC	Lu-174 (3.31y) ECB+	Lu-175 (STABLE)	Lu-176 (3.1y) B-	Lu-177 (6.647d) B-	Lu-178 (28d) B-	Lu-179 (4.59h) B-	Lu-180 (5.7m) B-	Lu-181 (3.5m) B-
Yb-172 (STABLE)	Yb-173 (STABLE)	Yb-174 (STABLE)	Yb-175 (4.185d) B-	Yb-176 (1.91y) B-	Yb-177 (74m) B-	Yb-178 (8.0m) B-	Yb-179 (8.0m) B-	Yb-180 (9E+6y) B-

LUTETIUM-177

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Lu-177
Atomic number (Z): 71
Mass number (A): 177
Neutron number (N): 106

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 6.647 [d]
Decay constant: $1.2069\text{e-}06$ [1/s]
Daughters: Hf-177 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.14792 [MeV]
Mean photon energy: 0.03509 [MeV]
Air kerma rate constant, Γ_{10} : $1.319\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $1.319\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $2.370\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

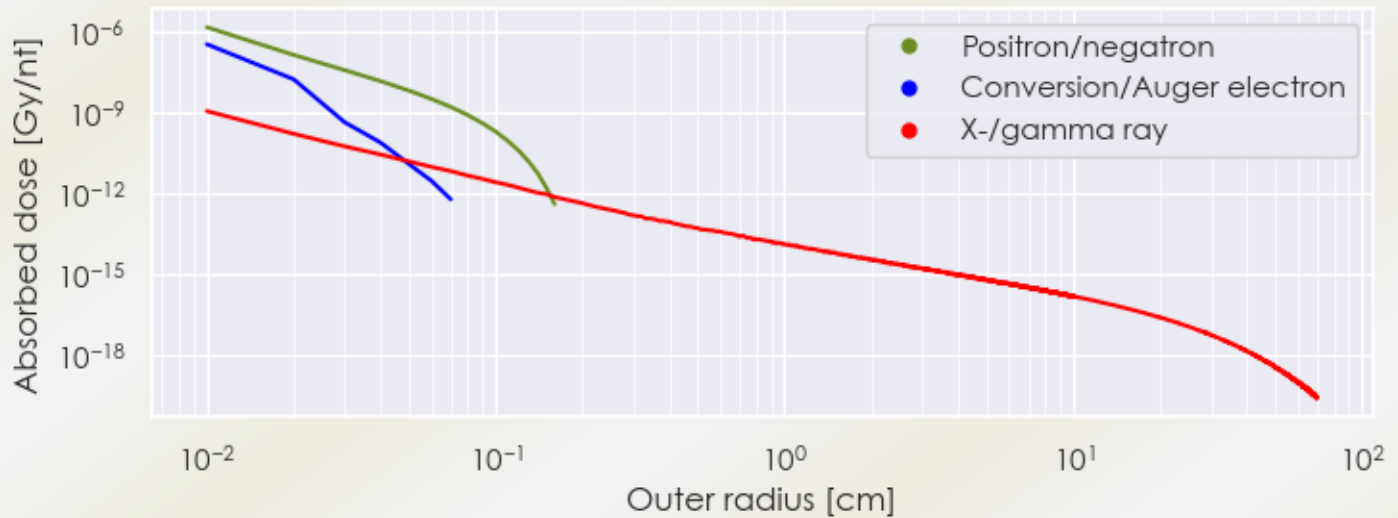
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 2.370×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.622×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

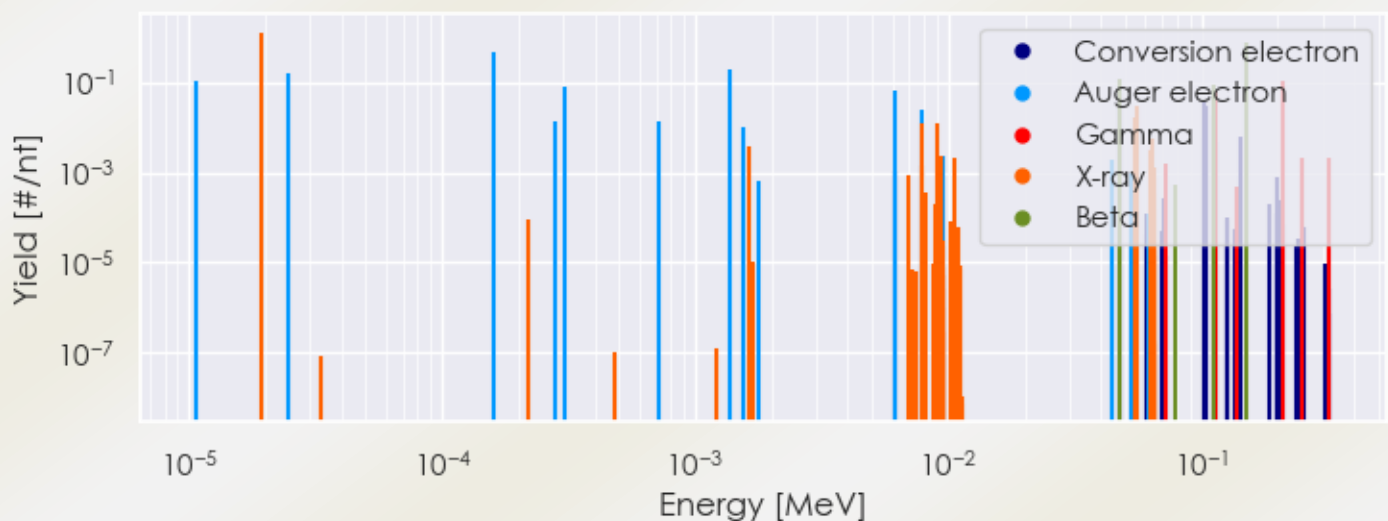
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Lu-177 DPK.csv

SUMMARY SPECTRA (PLOT)

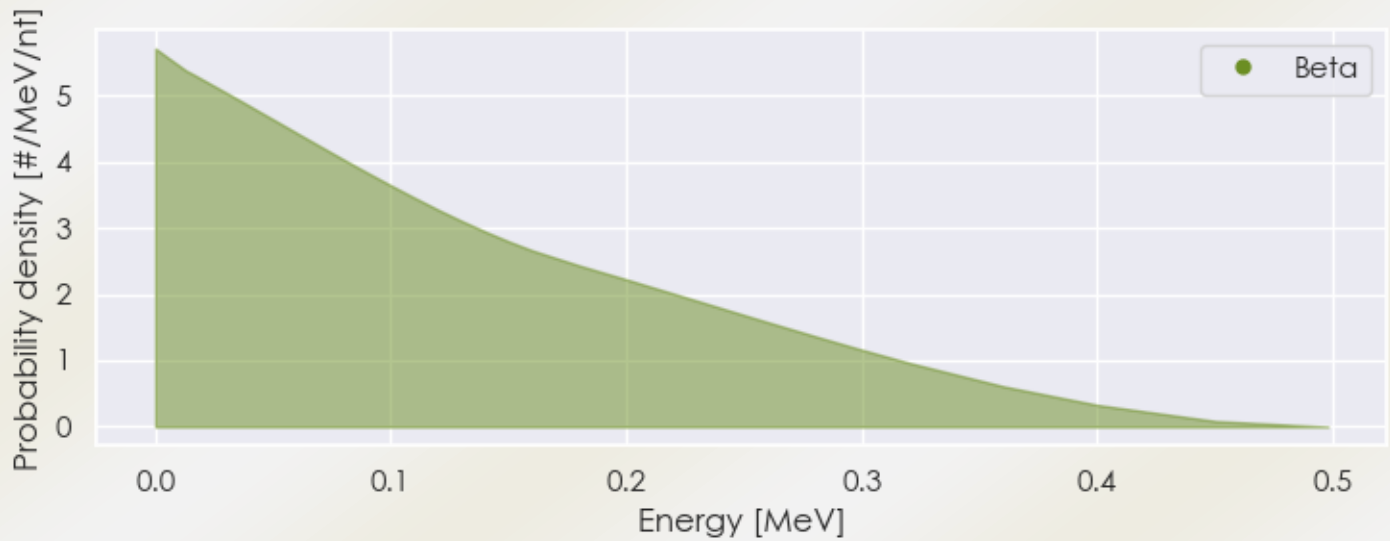
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Lu-177 Summary Spectrum.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-177 Beta Spectrum.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-177 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.94297e-05	1.281e+00	X-ray
7.88959e-03	1.278e-02	X-ray
9.03751e-03	1.176e-02	X-ray
5.47191e-02	1.632e-02	X-ray
5.59237e-02	2.855e-02	X-ray
1.12950e-01	6.400e-02	Gamma
2.08366e-01	1.100e-01	Gamma
4.75267e-02	1.221e-01	Beta
1.11507e-01	9.104e-02	Beta
1.49135e-01	7.864e-01	Beta

1.07320e-05	1.112e-01	Auger electron
2.44606e-05	1.578e-01	Auger electron
1.59973e-04	4.466e-01	Auger electron
2.81854e-04	1.407e-02	Auger electron
3.03459e-04	7.589e-02	Auger electron
7.16784e-04	1.350e-02	Auger electron
1.36622e-03	1.946e-01	Auger electron
1.54549e-03	1.027e-02	Auger electron
6.20291e-03	6.339e-02	Auger electron
7.82315e-03	2.354e-02	Auger electron
4.74678e-02	5.171e-02	Conversion electron
1.02187e-01	3.474e-02	Conversion electron
1.03392e-01	3.068e-02	Conversion electron
1.10851e-01	1.771e-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