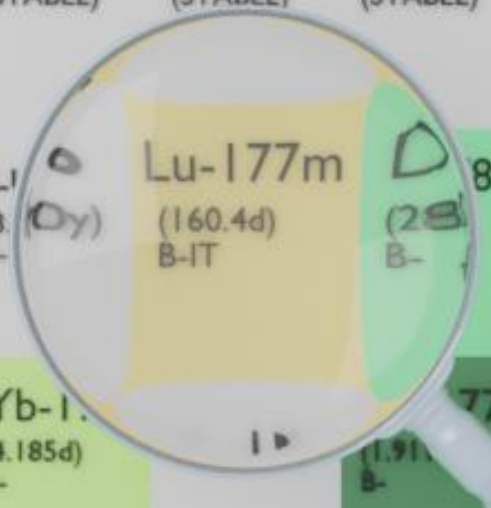




Lu-173 (137y) C	Lu-174 (3.31y) ECB+	Lu-175 (STABLE)	Lu-176 (3.37y) B-	Lu-177m (160.4d) B-IT	Lu-177 (4.59h) B-	Lu-178 (5.7m) B-	Lu-179 (3.5m) B-
Yb-172 (STABLE)	Yb-173 (STABLE)	Yb-174 (STABLE)	Yb-175 (4.185d) B-	Yb-176 (1.91y) B-	Yb-177 (74m) B-	Yb-178 (8.0m) B-	Yb-179 (8.0m) B-

LUTETIUM-177M

SUMMARY DATA

GENERAL

CLASSIFICATION

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

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 160.4 [d]
Decay constant: 5.0016×10^{-8} [1/s]
Daughters: Lu-177 (21.7%), Hf-177 (78.3%)
Radioactive daughters: Lu-177

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.26872 [MeV]
Mean photon energy: 1.00048 [MeV]
Air kerma rate constant, Γ_{10} : 3.774×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.774×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.305×10^{-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, $\Delta_{\beta,\beta^+,e^-}$: 4.305e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.603e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

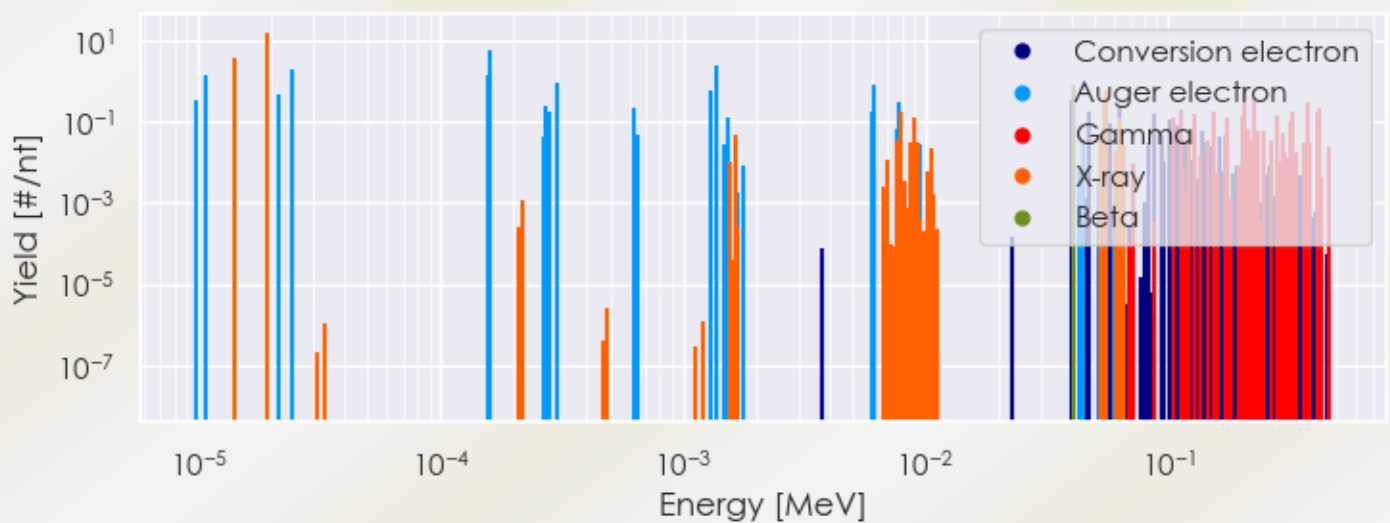
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

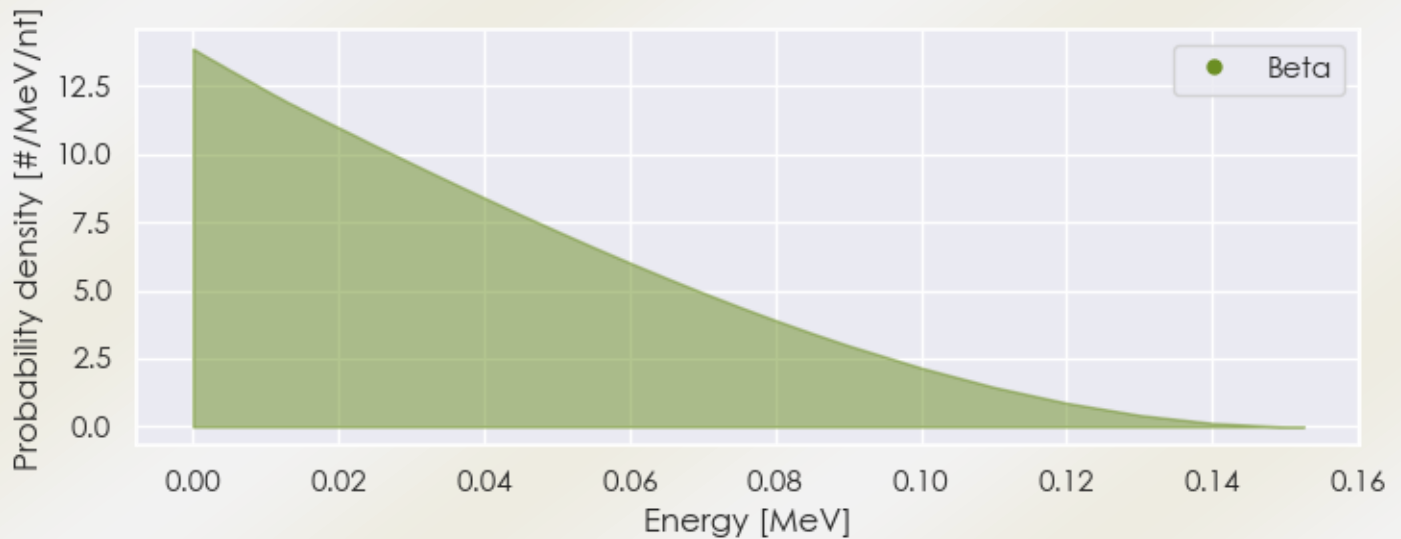
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.40273e-05	3.743e+00	X-ray
1.94170e-05	1.566e+01	X-ray
1.57085e-03	1.031e-02	X-ray
1.63795e-03	4.751e-02	X-ray
6.98230e-03	1.133e-02	X-ray
7.64541e-03	3.441e-02	X-ray
7.83282e-03	1.876e-02	X-ray
7.88959e-03	1.655e-01	X-ray
8.72221e-03	3.144e-02	X-ray

9.03750e-03	1.203e-01	X-ray
9.34358e-03	2.876e-02	X-ray
1.05374e-02	2.189e-02	X-ray
5.30692e-02	5.228e-02	X-ray
5.41988e-02	9.181e-02	X-ray
5.47191e-02	3.360e-01	X-ray
5.51500e-02	1.782e-02	Gamma
5.59237e-02	5.879e-01	X-ray
6.14258e-02	1.880e-02	X-ray
6.31238e-02	6.259e-02	X-ray
6.33831e-02	1.210e-01	X-ray
6.50467e-02	1.408e-02	X-ray
6.51064e-02	2.725e-02	X-ray
1.05360e-01	1.234e-01	Gamma
1.12950e-01	2.041e-01	Gamma
1.21621e-01	5.915e-02	Gamma
1.28503e-01	1.553e-01	Gamma
1.36725e-01	1.397e-02	Gamma
1.47164e-01	3.510e-02	Gamma
1.53284e-01	1.692e-01	Gamma
1.71858e-01	4.809e-02	Gamma
1.74399e-01	1.261e-01	Gamma
1.77001e-01	3.432e-02	Gamma
2.04105e-01	1.385e-01	Gamma
2.08366e-01	5.768e-01	Gamma
2.14434e-01	6.593e-02	Gamma
2.18104e-01	3.282e-02	Gamma
2.28484e-01	3.697e-01	Gamma
2.33861e-01	5.576e-02	Gamma
2.49674e-01	6.142e-02	Gamma
2.68785e-01	3.426e-02	Gamma
2.81787e-01	1.415e-01	Gamma
2.91420e-01	1.018e-02	Gamma
2.96458e-01	5.076e-02	Gamma
2.99051e-01	1.800e-02	Gamma
3.05503e-01	1.818e-02	Gamma
3.13725e-01	1.258e-02	Gamma
3.19021e-01	1.046e-01	Gamma

3.21316e-01	1.204e-02	Gamma
3.27683e-01	1.806e-01	Gamma
3.41643e-01	1.686e-02	Gamma
3.67418e-01	3.150e-02	Gamma
3.78503e-01	2.975e-01	Gamma
3.85030e-01	3.131e-02	Gamma
4.13664e-01	1.737e-01	Gamma
4.18539e-01	2.126e-01	Gamma
4.65842e-01	2.348e-02	Gamma
4.06790e-02	7.830e-01	Beta
9.88034e-06	3.253e-01	Auger electron
1.07975e-05	1.361e+00	Auger electron
2.16353e-05	4.606e-01	Auger electron
2.44610e-05	1.932e+00	Auger electron
1.56564e-04	1.338e+00	Auger electron
1.59822e-04	5.455e+00	Auger electron
2.63940e-04	4.073e-02	Auger electron
2.70469e-04	2.419e-01	Auger electron
2.82454e-04	1.715e-01	Auger electron
3.02162e-04	9.161e-01	Auger electron
6.23652e-04	2.218e-01	Auger electron
6.48542e-04	4.453e-02	Auger electron
1.31235e-03	5.605e-01	Auger electron
1.36424e-03	2.383e+00	Auger electron
1.48894e-03	2.705e-02	Auger electron
1.54215e-03	1.254e-01	Auger electron
6.02814e-03	1.829e-01	Auger electron
6.16813e-03	7.736e-01	Auger electron
7.58403e-03	6.691e-02	Auger electron
7.78777e-03	2.870e-01	Auger electron
9.43747e-03	2.685e-02	Auger electron
3.98775e-02	3.385e-01	Conversion electron
4.45280e-02	3.726e-02	Auger electron
4.74678e-02	1.649e-01	Conversion electron
5.24262e-02	1.354e-02	Conversion electron
5.31026e-02	1.929e-02	Auger electron
5.81790e-02	9.172e-02	Conversion electron
6.30210e-02	2.414e-01	Conversion electron

8.37220e-02	3.175e-02	Conversion electron
8.78023e-02	1.622e-01	Conversion electron
9.41145e-02	4.751e-02	Conversion electron
9.45965e-02	1.515e-02	Conversion electron
9.58012e-02	1.052e-02	Conversion electron
1.01705e-01	1.763e-02	Conversion electron
1.02187e-01	1.108e-01	Conversion electron
1.03261e-01	1.707e-02	Conversion electron
1.03392e-01	9.784e-02	Conversion electron
1.05495e-01	7.916e-02	Conversion electron
1.06625e-01	6.155e-02	Conversion electron
1.08416e-01	2.756e-02	Conversion electron
1.08917e-01	8.468e-02	Conversion electron
1.10776e-01	1.252e-02	Conversion electron
1.10851e-01	5.649e-02	Conversion electron
1.12950e-01	1.536e-02	Conversion electron
1.13852e-01	3.767e-02	Conversion electron
1.15868e-01	1.017e-02	Conversion electron
1.17258e-01	3.388e-02	Conversion electron
1.26404e-01	1.113e-02	Conversion electron
1.38623e-01	5.985e-02	Conversion electron
1.42039e-01	2.284e-02	Conversion electron
1.42884e-01	3.131e-02	Conversion electron
1.48952e-01	2.518e-02	Conversion electron
1.54662e-01	1.004e-02	Conversion electron
1.63002e-01	4.261e-02	Conversion electron
1.63154e-01	1.188e-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