



The image shows a portion of a periodic table of radionuclides. A magnifying glass is positioned over the entry for Ba-129m. The table includes isotopes of Lanthanum (La), Barium (Ba), and Cesium (Cs). Each entry typically shows the isotope name, its half-life in parentheses, and its decay mode. For example, Ba-129m has a half-life of (2.16h) and decays via ECβ+.

Isotope	Half-life	Decay Mode
La-128	(5.18m)	ECβ+
La-129	(11.6m)	ECβ+
La-130	(8.7m)	
La-131	(59m)	ECβ+
La-132	(4.8h)	ECβ+
La-133	(3.912h)	ECβ+
La-134	(6.45m)	ECβ+
Ba-126	(100m)	ECβ+
Ba-127	(12.7m)	ECβ+
Ba-128	(2.81m)	ECβ+
Ba-129m	(2.16h)	ECβ+
Ba-130	(11.50d)	EC
Ba-131	(10.52y)	EC
Ba-132	(STABLE)	
Ba-133	(10.52y)	EC
Cs-124	(10.8s)	ECβ+
Cs-125	(45m)	ECβ+
Cs-126	(1.64m)	ECβ+
Cs-127	(6.25h)	ECβ+
Cs-128	(32.0d)	ECβ+
Cs-129	(32.0d)	ECβ+
Cs-130	(29.21m)	ECβ+B-
Cs-131	(9.689d)	EC
Cs-132	(6.479d)	ECβ+B-

BARIUM-129M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ba-129m
Atomic number (Z): 56
Mass number (A): 129
Neutron number (N): 73

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 2.16 [h]
Decay constant: $8.9139\text{e-}05$ [1/s]
Daughters: Cs-129 (100.0%)
Radioactive daughters: Cs-129

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04185 [MeV]
Mean photon energy: 1.5833 [MeV]
Air kerma rate constant, Γ_{10} : $5.919\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $5.961\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $6.705\text{e-}15$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

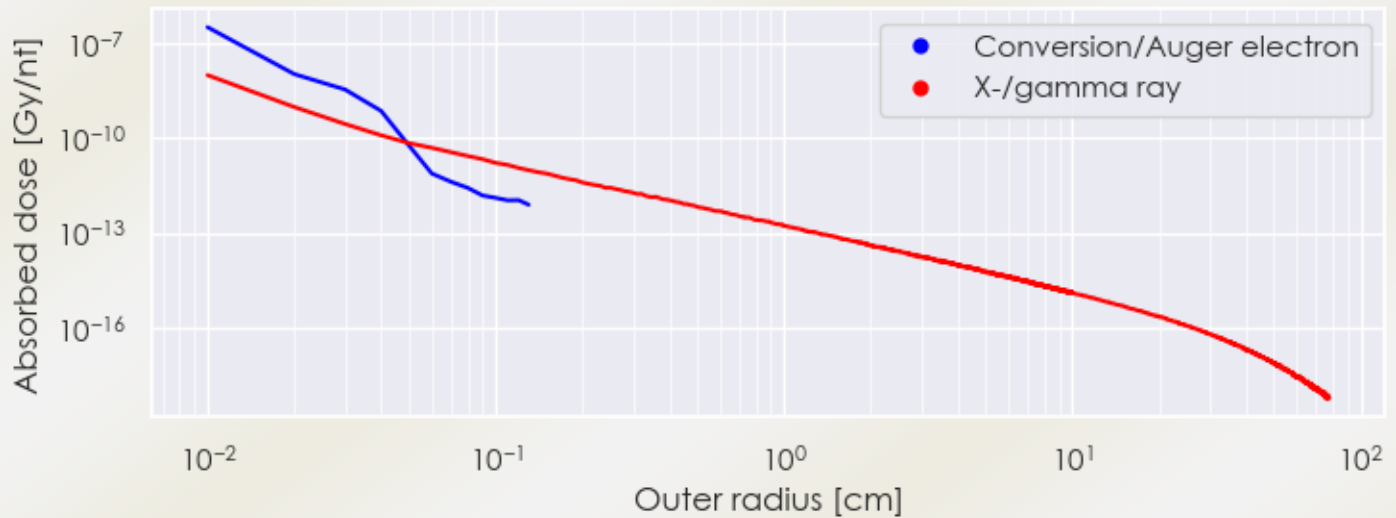
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 6.705×10^{-15} [Gy · kg/Bq · s]

Equilibrium dose constant for photons, Δ_p : 2.537×10^{-13} [Gy · kg/Bq · s]

DOSE POINT KERNELS (PLOT)

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

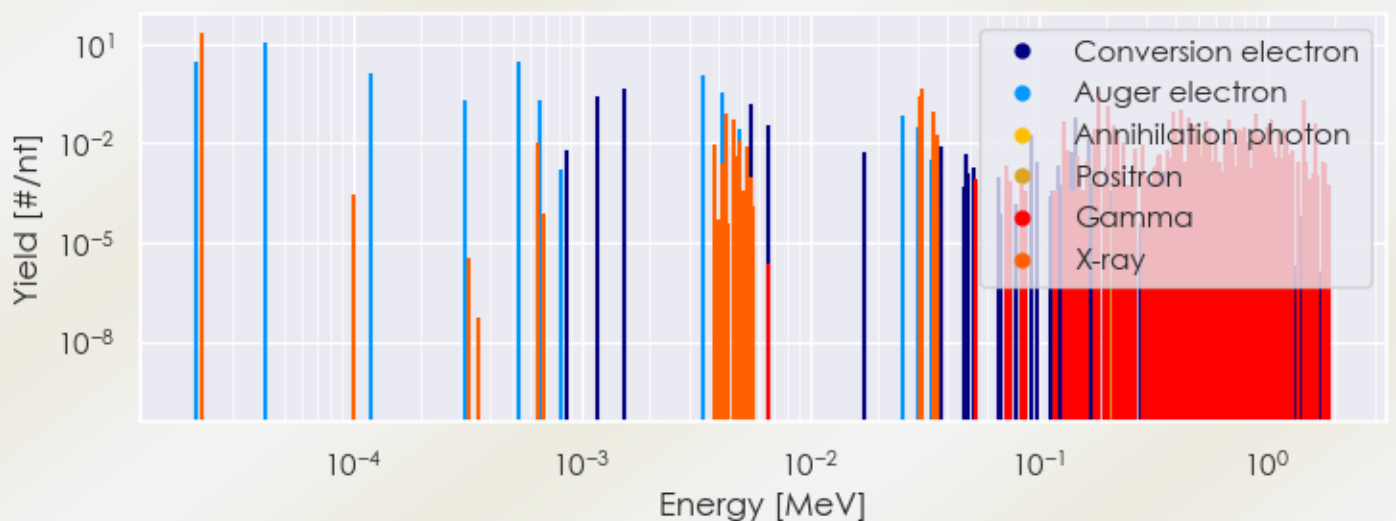
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ba-129m DPK.csv

SUMMARY SPECTRA (PLOT)

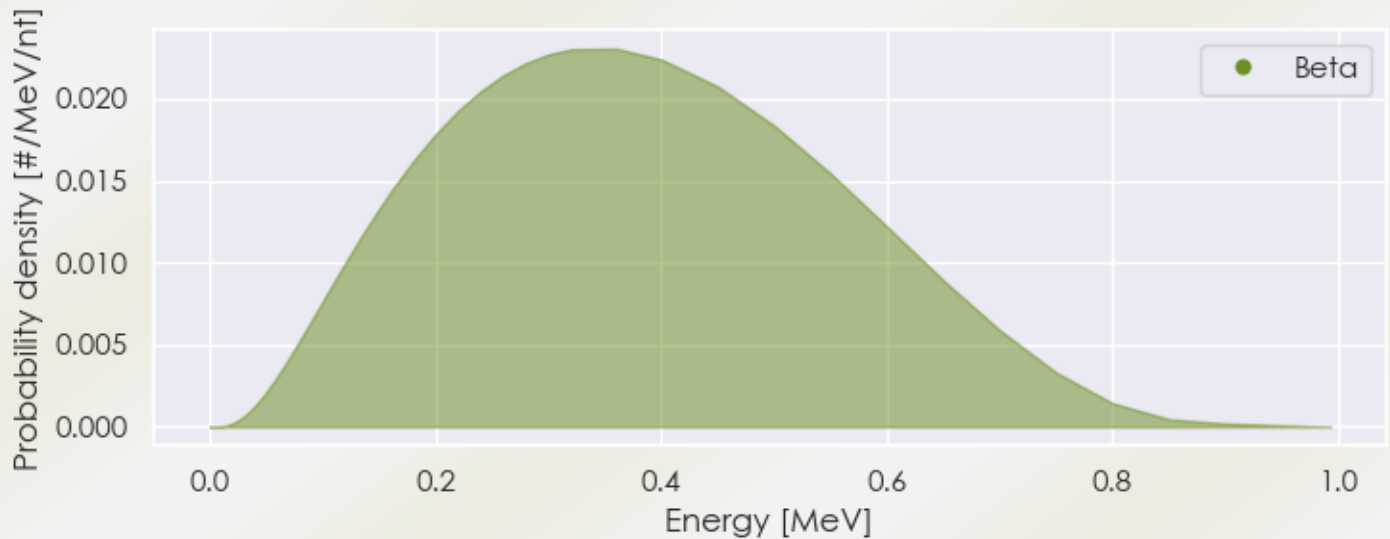
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ba-129m 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/Ba-129m 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/Ba-129m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.18863e-05	2.265e+01	X-ray
6.46297e-04	1.069e-02	X-ray
4.27312e-03	8.022e-02	X-ray
4.61550e-03	4.906e-02	X-ray
4.92286e-03	1.223e-02	X-ray
3.06218e-02	2.489e-01	X-ray
3.09789e-02	4.597e-01	X-ray
3.49256e-02	4.355e-02	X-ray
3.49944e-02	8.442e-02	X-ray

3.58172e-02	1.786e-02	X-ray
1.29140e-01	4.484e-02	Gamma
1.77020e-01	2.858e-02	Gamma
1.82320e-01	3.800e-01	Gamma
2.02380e-01	1.281e-01	Gamma
2.14300e-01	3.310e-02	Gamma
2.20830e-01	2.155e-02	Gamma
2.37650e-01	1.098e-02	Gamma
3.92330e-01	8.436e-02	Gamma
3.94500e-01	2.470e-02	Gamma
4.14000e-01	1.045e-02	Gamma
4.16100e-01	1.045e-02	Gamma
4.19830e-01	1.015e-01	Gamma
4.19830e-01	1.015e-01	Gamma
4.59430e-01	5.966e-02	Gamma
4.67760e-01	1.870e-02	Gamma
4.81300e-01	3.618e-02	Gamma
5.01380e-01	2.565e-02	Gamma
5.11000e-01	2.171e-02	Annihilation photon
5.34300e-01	1.258e-02	Gamma
5.42600e-01	1.463e-02	Gamma
5.46400e-01	4.408e-02	Gamma
5.49000e-01	1.752e-02	Gamma
5.51500e-01	1.752e-02	Gamma
5.56900e-01	1.265e-02	Gamma
5.66210e-01	2.884e-02	Gamma
5.96780e-01	2.014e-02	Gamma
6.56100e-01	1.448e-02	Gamma
6.78800e-01	5.244e-02	Gamma
6.89000e-01	1.585e-02	Gamma
6.90300e-01	1.585e-02	Gamma
7.00600e-01	1.030e-02	Gamma
7.12000e-01	1.094e-02	Gamma
7.48500e-01	2.633e-02	Gamma
7.48500e-01	2.633e-02	Gamma
7.69000e-01	1.121e-02	Gamma
7.80200e-01	2.440e-02	Gamma
8.03000e-01	3.238e-02	Gamma

8.20700e-01	1.068e-02	Gamma
8.72500e-01	2.022e-02	Gamma
8.92600e-01	8.056e-02	Gamma
9.33100e-01	1.714e-02	Gamma
9.35000e-01	1.714e-02	Gamma
9.57700e-01	1.554e-02	Gamma
9.62600e-01	1.056e-02	Gamma
9.99400e-01	2.972e-02	Gamma
1.03460e+00	3.078e-02	Gamma
1.04470e+00	5.244e-02	Gamma
1.04710e+00	2.964e-02	Gamma
1.12220e+00	1.968e-02	Gamma
1.12640e+00	1.003e-02	Gamma
1.20900e+00	2.546e-02	Gamma
1.22160e+00	2.421e-02	Gamma
1.45910e+00	1.900e-01	Gamma
1.62360e+00	4.180e-02	Gamma
2.07370e-05	3.000e+00	Auger electron
4.14109e-05	1.076e+01	Auger electron
1.19775e-04	1.309e+00	Auger electron
3.08806e-04	2.073e-01	Auger electron
5.27862e-04	2.989e+00	Auger electron
6.51621e-04	1.956e-01	Auger electron
1.18680e-03	2.764e-01	Conversion electron
1.54390e-03	4.395e-01	Conversion electron
3.43629e-03	1.168e+00	Auger electron
4.15586e-03	3.600e-01	Auger electron
4.90296e-03	2.766e-02	Auger electron
5.55932e-03	1.533e-01	Conversion electron
6.55000e-03	3.628e-02	Conversion electron
2.53980e-02	6.529e-02	Auger electron
2.98089e-02	2.967e-02	Auger electron
9.31550e-02	1.742e-02	Conversion electron
1.46335e-01	5.664e-02	Conversion electron
1.66395e-01	1.428e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6