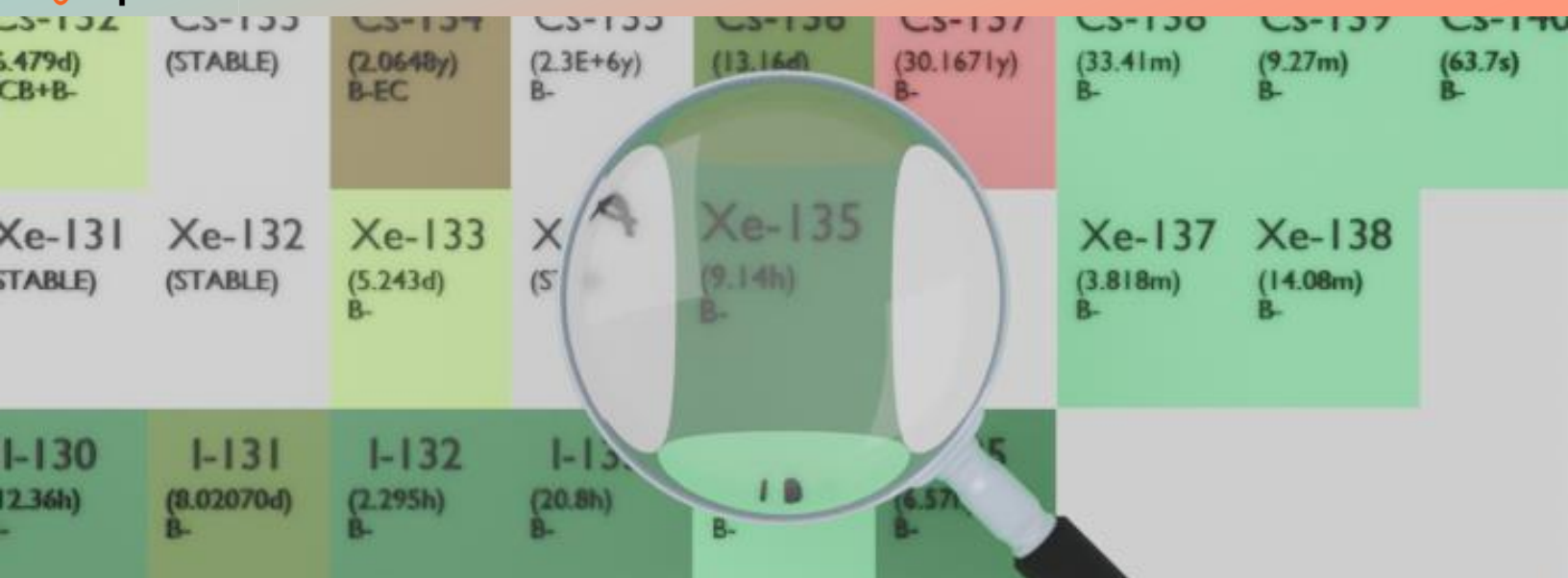




XENON-135

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Xe-135
Atomic number (Z): 54
Mass number (A): 135
Neutron number (N): 81

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 9.14 [h]
Decay constant: $2.1066\text{e-}05$ [1/s]
Daughters: Cs-135 (100.0%)
Radioactive daughters: Cs-135

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.32084 [MeV]
Mean photon energy: 0.24828 [MeV]
Air kerma rate constant, Γ_{10} : $9.103\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $9.103\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $5.140\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

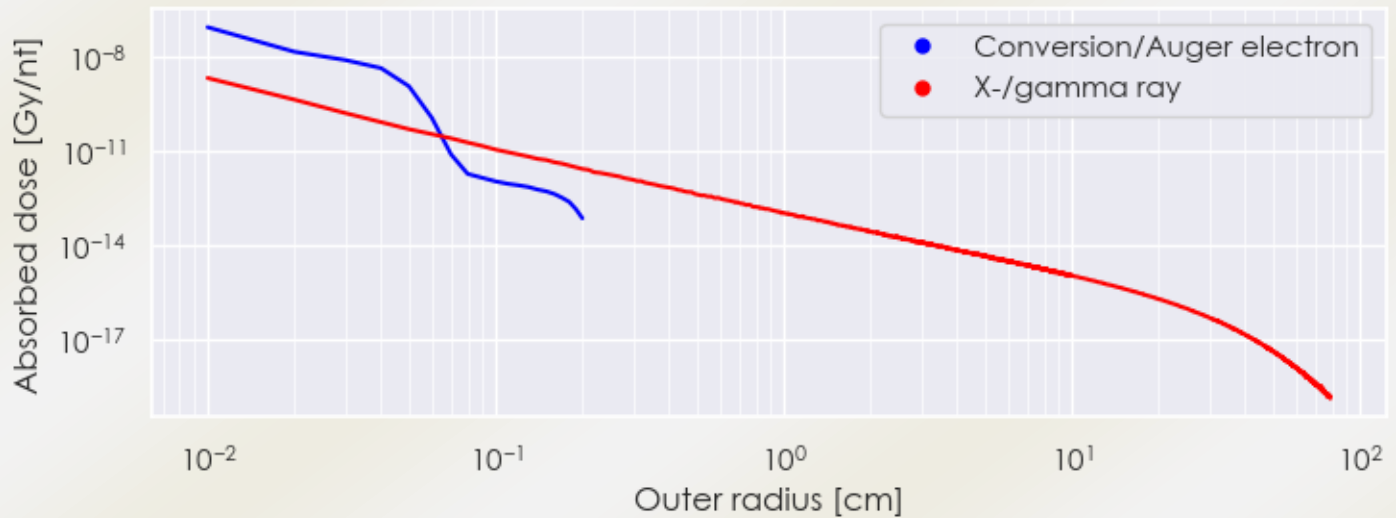
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.140×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.978×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

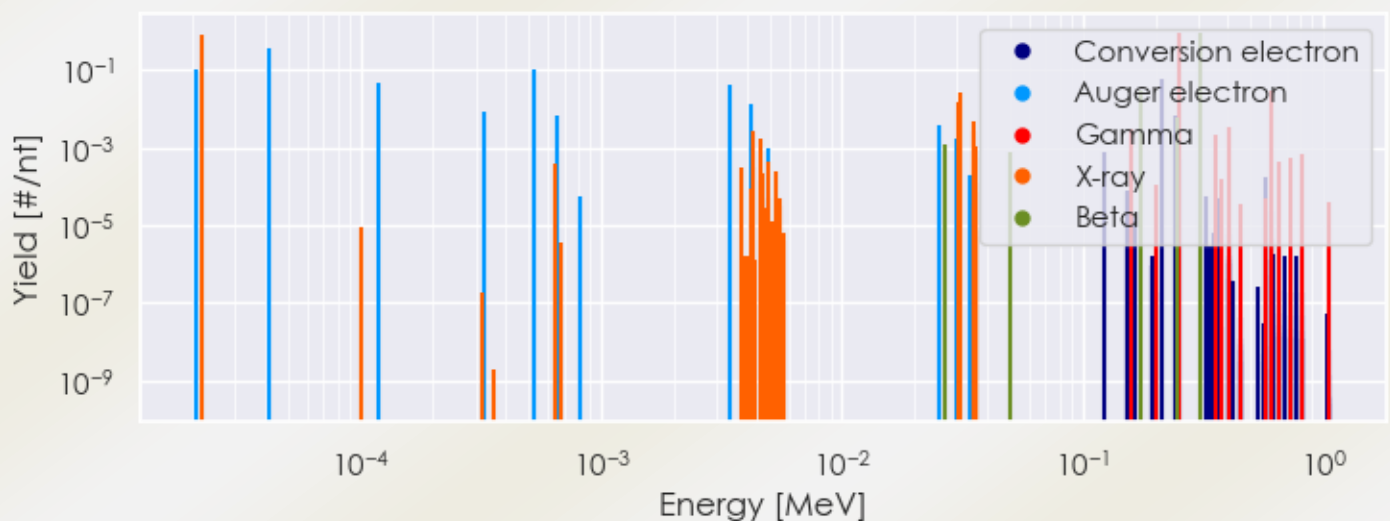
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Xe-135 DPK.csv

SUMMARY SPECTRA (PLOT)

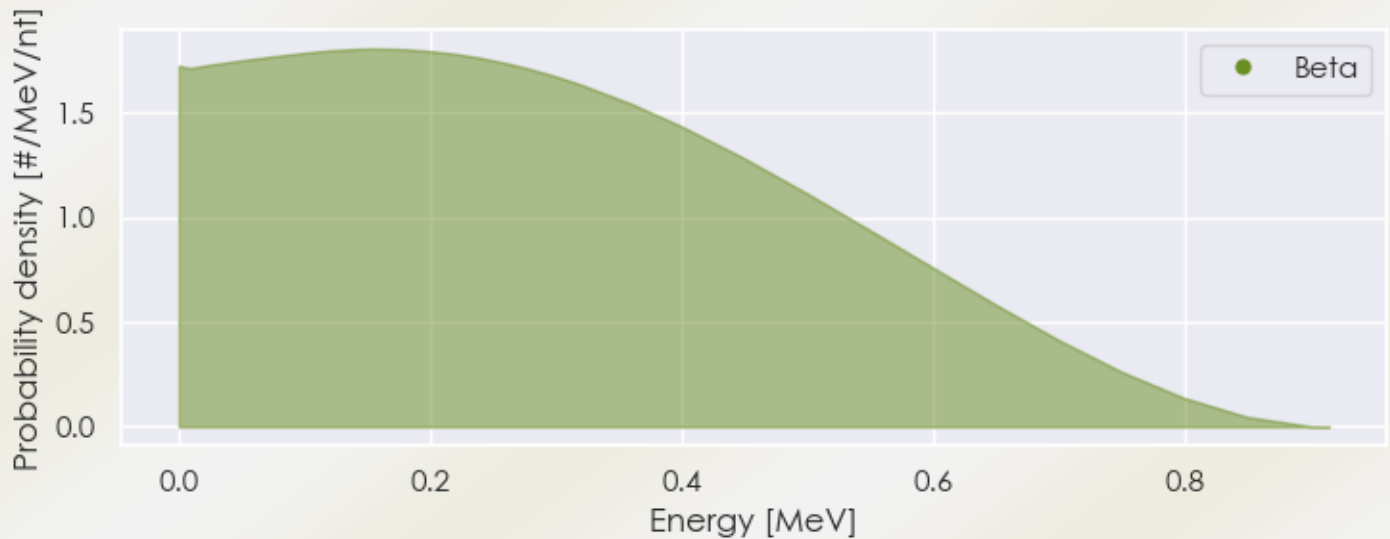
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Xe-135 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/Xe-135 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/Xe-135 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.18865e-05	8.079e-01	X-ray
3.06218e-02	1.499e-02	X-ray
3.09789e-02	2.768e-02	X-ray
2.49794e-01	9.000e-01	Gamma
6.08185e-01	2.898e-02	Gamma
1.73206e-01	3.113e-02	Beta
3.10175e-01	9.610e-01	Beta
2.08746e-05	1.074e-01	Auger electron
4.14326e-05	3.836e-01	Auger electron
1.19664e-04	4.692e-02	Auger electron

5.28144e-04	1.058e-01	Auger electron
3.44390e-03	4.162e-02	Auger electron
4.16463e-03	1.283e-02	Auger electron
2.13809e-01	5.706e-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