

Internal background status

Simulation meeting

Melba D'Astolfo, 13/01/2025

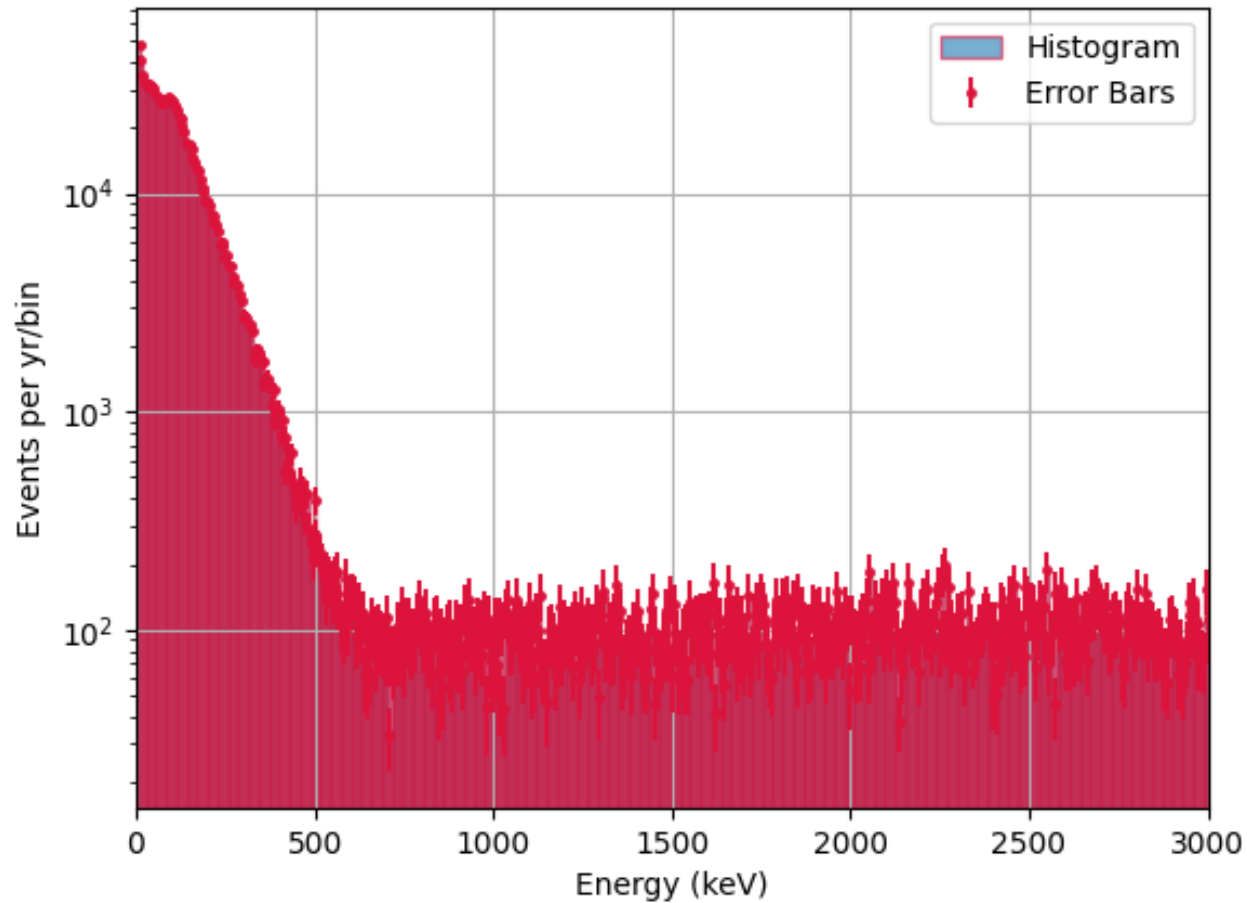
FIELD CAGE - REFERENCES

PET_Cu Field Cage (glued)				PET_Cu Field Cage (no glued)			Kapton+Cu Field Cage		
Nuclides	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)
Th-234	0.09	0.27	0.53	0.08	0.60	1.07	-	-	-
Pa-234m	-	-	-	-	-	-	0.62	0.44	1.34
Ra-226	$8.06 \cdot 10^{-3}$	$9.70 \cdot 10^{-3}$	$24.01 \cdot 10^{-3}$	$35.71 \cdot 10^{-3}$	$23.22 \cdot 10^{-3}$	$73.92 \cdot 10^{-3}$	$6.98 \cdot 10^{-3}$	$4.24 \cdot 10^{-3}$	$14.02 \cdot 10^{-3}$
Pb-214	$8.06 \cdot 10^{-3}$	$9.70 \cdot 10^{-3}$	$24.01 \cdot 10^{-3}$	$28.31 \cdot 10^{-3}$	$44.23 \cdot 10^{-3}$	$101,02 \cdot 10^{-3}$	$17.61 \cdot 10^{-3}$	$11.81 \cdot 10^{-3}$	$36.92 \cdot 10^{-3}$
Bi-214	-	-	-	$38.51 \cdot 10^{-3}$	$27.32 \cdot 10^{-3}$	$83.41 \cdot 10^{-3}$	$5.41 \cdot 10^{-3}$	$4.54 \cdot 10^{-3}$	$12.91 \cdot 10^{-3}$
Ac-228	$0.36 \cdot 10^{-3}$	$14.91 \cdot 10^{-3}$	$25.02 \cdot 10^{-3}$	$9.02 \cdot 10^{-3}$	$33.31 \cdot 10^{-3}$	$63.81 \cdot 10^{-3}$	$5.05 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	$27.83 \cdot 10^{-3}$
Pb-212	$25.81 \cdot 10^{-3}$	$9.99 \cdot 10^{-3}$	-	-	-	-	-	-	-
Bi-212	$57.03 \cdot 10^{-3}$	$33.94 \cdot 10^{-3}$	0.11	-	-	-	-	-	-
Tl-208	$26.83 \cdot 10^{-3}$	$10.40 \cdot 10^{-3}$	-	$43.32 \cdot 10^{-3}$	$21.20 \cdot 10^{-3}$	-	$21.83 \cdot 10^{-3}$	$11.13 \cdot 10^{-3}$	$40.03 \cdot 10^{-3}$
U-235	$10.72 \cdot 10^{-3}$	$7.69 \cdot 10^{-3}$	$23.41 \cdot 10^{-3}$	$23.92 \cdot 10^{-3}$	$17.33 \cdot 10^{-3}$	$52.43 \cdot 10^{-3}$	$12.54 \cdot 10^{-3}$	$8.37 \cdot 10^{-3}$	$26.31 \cdot 10^{-3}$
K-40	0.16	0.07	-	0.18	0.15	0.43	-	-	-
Cs-137	$5.96 \cdot 10^{-3}$	$3.65 \cdot 10^{-3}$	$12.01 \cdot 10^{-3}$	-	-	-	-	-	-
Co-60	-	-	-	$1.54 \cdot 10^{-3}$	$7.48 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	-	-	-

PET_Cu Field Cage (glued)				PET_Cu Field Cage (no glued)			Kapton+Cu Field Cage		
Nuclides	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)	Activity (Bq/kg)	Uncert. (Bq/kg)	Limit (Bq/kg)
Th-234	0.09	0.27	0.53	0.08	0.60	1.07	-	-	-
Pa-234m	-	-	-	-	-	-	0.62	0.44	1.34
Ra-226	$8.06 \cdot 10^{-3}$	$9.70 \cdot 10^{-3}$	$24.01 \cdot 10^{-3}$	$35.71 \cdot 10^{-3}$	$23.22 \cdot 10^{-3}$	$73.92 \cdot 10^{-3}$	$6.98 \cdot 10^{-3}$	$4.24 \cdot 10^{-3}$	$14.02 \cdot 10^{-3}$
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Bi-214	-	-	-	$38.51 \cdot 10^{-3}$	$27.32 \cdot 10^{-3}$	$83.41 \cdot 10^{-3}$	$5.41 \cdot 10^{-3}$	$4.54 \cdot 10^{-3}$	$12.91 \cdot 10^{-3}$
Ac-228	$0.36 \cdot 10^{-3}$	$14.91 \cdot 10^{-3}$	$25.02 \cdot 10^{-3}$	$9.02 \cdot 10^{-3}$	$33.31 \cdot 10^{-3}$	$63.81 \cdot 10^{-3}$	$5.05 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	$27.83 \cdot 10^{-3}$
Pb-212	$25.81 \cdot 10^{-3}$	$9.99 \cdot 10^{-3}$	-	-	-	-	-	-	-
Bi-212	$57.03 \cdot 10^{-3}$	$33.94 \cdot 10^{-3}$	0.11	-	-	-	-	-	-
Tl-208	$26.83 \cdot 10^{-3}$	$10.40 \cdot 10^{-3}$	-	$43.32 \cdot 10^{-3}$	$21.20 \cdot 10^{-3}$	-	$21.83 \cdot 10^{-3}$	$11.13 \cdot 10^{-3}$	$40.03 \cdot 10^{-3}$
U-235	$10.72 \cdot 10^{-3}$	$7.69 \cdot 10^{-3}$	$23.41 \cdot 10^{-3}$	$23.92 \cdot 10^{-3}$	$17.33 \cdot 10^{-3}$	$52.43 \cdot 10^{-3}$	$12.54 \cdot 10^{-3}$	$8.37 \cdot 10^{-3}$	$26.31 \cdot 10^{-3}$
K-40	0.16	0.07	-	0.18	0.15	0.43	-	-	-
Cs-137	$5.96 \cdot 10^{-3}$	$3.65 \cdot 10^{-3}$	$12.01 \cdot 10^{-3}$	-	-	-	-	-	-
Co-60	-	-	-	$1.54 \cdot 10^{-3}$	$7.48 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	-	-	-

FIELD CAGE - REFERENCES

PET_Cu Field Cage (glued)				PET_Cu Field Cage (no glued)			Kapton+Cu Field Cage		
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Th-234	0.09	0.27	0.53	0.08	0.60	1.07	-	-	-
Pa-234m	-	-	-	-	-	-	0.62	0.44	1.34
Ra-226	$8.06 \cdot 10^{-3}$	$9.70 \cdot 10^{-3}$	$24.01 \cdot 10^{-3}$	$35.71 \cdot 10^{-3}$	$23.22 \cdot 10^{-3}$	$73.92 \cdot 10^{-3}$	$6.98 \cdot 10^{-3}$	$4.24 \cdot 10^{-3}$	$14.02 \cdot 10^{-3}$
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Bi-214	-	-	-	$38.51 \cdot 10^{-3}$	$27.32 \cdot 10^{-3}$	$83.41 \cdot 10^{-3}$	$5.41 \cdot 10^{-3}$	$4.54 \cdot 10^{-3}$	$12.91 \cdot 10^{-3}$
Ac-228	$0.36 \cdot 10^{-3}$	$14.91 \cdot 10^{-3}$	$25.02 \cdot 10^{-3}$	$9.02 \cdot 10^{-3}$	$33.31 \cdot 10^{-3}$	$63.81 \cdot 10^{-3}$	$5.05 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	$27.83 \cdot 10^{-3}$
Pb-212	$25.81 \cdot 10^{-3}$	$9.99 \cdot 10^{-3}$	-	-	-	-	-	-	-
Bi-212	$57.03 \cdot 10^{-3}$	$33.94 \cdot 10^{-3}$	0.11	-	-	-	-	-	-
Tl-208	$26.83 \cdot 10^{-3}$	$10.40 \cdot 10^{-3}$	-	$43.32 \cdot 10^{-3}$	$21.20 \cdot 10^{-3}$	-	$21.83 \cdot 10^{-3}$	$11.13 \cdot 10^{-3}$	$40.03 \cdot 10^{-3}$
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Cs-137	$5.96 \cdot 10^{-3}$	$3.65 \cdot 10^{-3}$	$12.01 \cdot 10^{-3}$	-	-	-	-	-	-
Co-60	-	-	-	$1.54 \cdot 10^{-3}$	$7.48 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	-	-	-



Key event rates

Low energy range [1,20] keV

$$(8.25 \pm 0.06) \times 10^5$$

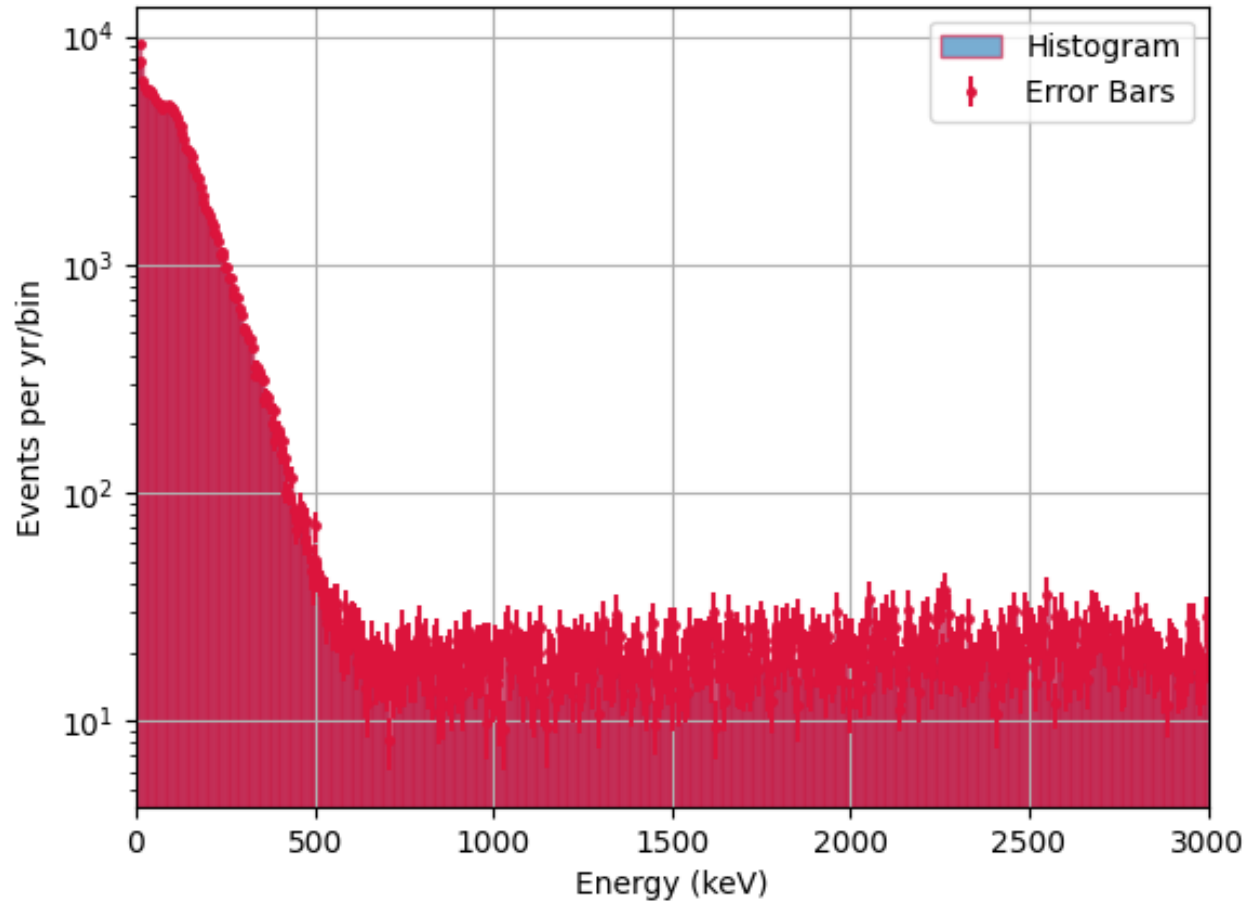
evt per year

Low energy range [1,20] keV NR

$$(6.14 \pm 0.50) \times 10^3$$

evt per year

PET_Cu Field Cage (glued)				PET_Cu Field Cage (no glued)			Kapton+Cu Field Cage		
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Bi-214	-	-	-	$38.51 \cdot 10^{-3}$	$27.32 \cdot 10^{-3}$	$83.41 \cdot 10^{-3}$	$5.41 \cdot 10^{-3}$	$4.54 \cdot 10^{-3}$	$12.91 \cdot 10^{-3}$
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Pb-212	$25.81 \cdot 10^{-3}$	$9.99 \cdot 10^{-3}$	-	-	-	-	-	-	-
Bi-212	$57.03 \cdot 10^{-3}$	$33.94 \cdot 10^{-3}$	0.11	-	-	-	-	-	-
Tl-208	$26.83 \cdot 10^{-3}$	$10.40 \cdot 10^{-3}$	-	$43.32 \cdot 10^{-3}$	$21.20 \cdot 10^{-3}$	-	$21.83 \cdot 10^{-3}$	$11.13 \cdot 10^{-3}$	$40.03 \cdot 10^{-3}$
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K-40	0.16	0.07	-	0.18	0.15	0.43	-	-	-
Cs-137	$5.96 \cdot 10^{-3}$	$3.65 \cdot 10^{-3}$	$12.01 \cdot 10^{-3}$	-	-	-	-	-	-
Co-60	-	-	-	$1.54 \cdot 10^{-3}$	$7.48 \cdot 10^{-3}$	$13.82 \cdot 10^{-3}$	-	-	-



Key event rates

Low energy range [1,20] keV

$$(1.56 \pm 0.01) \times 10^5$$

evt per year

Low energy range [1,20] keV NR

$$(1.20 \pm 0.08) \times 10^3$$

evt per year