

# Alma9 vs Centos7 Dark Photon Efficiency Check

December 3rd 2024

# Intro

- Checked the efficiencies for alma 9 vs centos7 for the 3 dark photon samples
- Looks like tracking efficiency generally improved

# Sample 110038

CentOS7

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19955	0.998	0.998
No VetoNu	19955	1	0.998
No Veto	19895	0.997	0.977
Timing Signal	19547	0.982	0.977
Preshower Signal	19547	1	0.977
>=1 Good Track	18281	0.935	0.914
==2 Good Track	11954	0.654	0.598
Fiducial	10874	0.91	0.544
Calo Energy	10729	0.987	0.536

Alma9

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19955	0.998	0.998
No VetoNu	19955	1	0.998
No Veto	19895	0.997	0.995
Timing Signal	19546	0.982	0.977
Preshower Signal	19546	1	0.977
>=1 Good Track	18649	0.954	0.932
==2 Good Track	12530	0.671	0.627
Fiducial	11387	0.909	0.569
Calo Energy	11243	0.987	0.562

# Sample 110033

CentOS7

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19788	0.989	0.989
No VetoNu	19788	1	0.989
No Veto	19766	0.999	0.988
Timing Signal	19299	0.976	0.965
Preshower Signal	19295	0.999	0.965
>=1 Good Track	16593	0.86	0.83
==2 Good Track	8987	0.542	0.45
Fiducial	7685	0.855	0.385
Calo Energy	2354	0.306	0.118

Alma9

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19788	0.989	0.989
No VetoNu	19788	1	0.989
No Veto	19767	0.999	0.988
Timing Signal	19300	0.976	0.965
Preshower Signal	19296	0.999	0.965
>=1 Good Track	17112	0.887	0.856
==2 Good Track	9617	0.562	0.481
Fiducial	8095	0.842	0.405
Calo Energy	2352	0.291	0.117

# Sample 110051

CentOS7

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19958	0.998	0.998
No VetoNu	19956	0.999	0.998
No Veto	19900	0.997	0.998
Timing Signal	19566	0.983	0.978
Preshower Signal	19566	1	0.978
>=1 Good Track	18226	0.932	0.911
==2 Good Track	12163	0.667	0.608
Fiducial	11002	0.905	0.55
Calo Energy	10849	0.986	0.542

Alma9

Cut	# Events	Efficiency	Cum. Effs
No Cuts	20k	1	1
No Timing Saturation	19958	0.998	0.998
No VetoNu	19956	0.999	0.998
No Veto	19900	0.998	0.995
Timing Signal	19566	0.983	0.978
Preshower Signal	19566	1	0.978
>=1 Good Track	18687	0.955	0.934
==2 Good Track	12837	0.687	0.642
Fiducial	11560	0.9	0.578
Calo Energy	11417	0.988	0.571