

Table 1: Data fake rates for Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0865570	0.0255455	0.0255476	0.0160860	0.0114736
Loose Cra	0.0646458	0.0750663	0.0702164	0.0659398	0.0239618
Loose End	0.6873414	0.0320608	0.0319434	0.0228367	0.0029473
Loose (TOL) Bar	0.0623184	0.0263459	0.0263227	0.0158459	0.0125175
Loose (TOL) Cra	0.0580636	0.0752213	0.0700114	0.0655655	0.0242149
Loose (TOL) End	0.1665542	0.0294184	0.0296560	0.0221713	0.0060700
Loose (MOL) Bar	0.0254343	0.0262510	0.0263307	0.0152264	0.0130778
Loose (MOL) Cra	0.0331853	0.0651284	0.0562765	0.0526816	0.0174476
Loose (MOL) End	0.1025967	0.0270238	0.0273142	0.0201039	0.0028958
Medium Bar	0.0307020	0.0260260	0.0261334	0.0153580	0.0126240
Medium Cra	0.0248745	0.0720754	0.0668818	0.0615161	0.0257585
Medium End	0.0979800	0.0308835	0.0306739	0.0193840	0.0040252
Medium (TOL) Bar	0.0249568	0.0258638	0.0259662	0.0153998	0.0126800
Medium (TOL) Cra	0.0251613	0.0719875	0.0666729	0.0616088	0.0254716
Medium (TOL) End	0.0571781	0.0329921	0.0323705	0.0182029	0.0055943
Medium (MOL) Bar	0.0172988	0.0259606	0.0261228	0.0150392	0.0124605
Medium (MOL) Cra	0.0229151	0.0695602	0.0598687	0.0551164	0.0213887
Medium (MOL) End	0.0389782	0.0316417	0.0310205	0.0175987	0.0054856
Tight Bar	0.0144032	0.0235927	0.0238556	0.0147135	0.0118550
Tight Cra	0.0240384	0.0606256	0.0535828	0.0494353	0.0202654
Tight End	0.0849729	0.0276655	0.0274667	0.0192181	0.0039547
Tight (TOL) Bar	0.0146869	0.0233366	0.0236136	0.0147732	0.0115713
Tight (TOL) Cra	0.0240656	0.0606358	0.0535782	0.0494416	0.0202382
Tight (TOL) End	0.0456447	0.0301876	0.0294459	0.0180797	0.0049220
Tight (MOL) Bar	0.0112365	0.0237963	0.0241478	0.0145253	0.0110829
Tight (MOL) Cra	0.0272818	0.0719352	0.0598211	0.0550295	0.0170220
Tight (MOL) End	0.0356773	0.0302946	0.0296176	0.0178974	0.0044273

Table 2: Data fake rates for BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0448292	0.0534161	0.0533316	0.0193378	0.0352583
Loose Cra	0.0832525	0.0736862	0.0733619	0.0674694	0.0243425
Loose End	0.1378222	0.0378333	0.0381665	0.0227522	0.0147497
Loose (TOL) Bar	0.0424787	0.0538873	0.0537703	0.0194317	0.0354207
Loose (TOL) Cra	0.0763840	0.0726228	0.0721924	0.0666189	0.0248818
Loose (TOL) End	0.0971376	0.0384273	0.0388297	0.0222973	0.0127142
Loose (MOL) Bar	0.0326273	0.0557606	0.0556636	0.0194559	0.0334558
Loose (MOL) Cra	0.0761544	0.0286316	0.0227809	0.0211326	0.0002051
Loose (MOL) End	0.0716362	0.0459338	0.0459521	0.0225852	0.0077012
Medium Bar	0.0264293	0.0513458	0.0511951	0.0184656	0.0309011
Medium Cra	0.0218354	0.0717015	0.0654067	0.0614101	0.0224684
Medium End	0.0558541	0.0382562	0.0382724	0.0224957	0.0086621
Medium (TOL) Bar	0.0259101	0.0515287	0.0513747	0.0185507	0.0309827
Medium (TOL) Cra	0.0218354	0.0717015	0.0654067	0.0614101	0.0224684
Medium (TOL) End	0.0457439	0.0393839	0.0393982	0.0224460	0.0074383
Medium (MOL) Bar	0.0270037	0.0528323	0.0526951	0.0191033	0.0277009
Medium (MOL) Cra	0.0447417	0.0389109	0.0270669	0.0205513	0.0004379
Medium (MOL) End	0.0472513	0.0430709	0.0431931	0.0064295	0.0001720
Tight Bar	0.0123825	0.0447584	0.0445928	0.0175328	0.0265672
Tight Cra	0.0170441	0.0678010	0.0597494	0.0549722	0.0209306
Tight End	0.0338944	0.0330431	0.0329830	0.0055151	0.0001073
Tight (TOL) Bar	0.0117165	0.0451285	0.0449596	0.0175944	0.0267956
Tight (TOL) Cra	0.0170441	0.0678010	0.0597494	0.0549722	0.0209306
Tight (TOL) End	0.0316881	0.0330582	0.0330200	0.0052975	0.0003018
Tight (MOL) Bar	0.0112961	0.0470125	0.0468796	0.0177472	0.0254654
Tight (MOL) Cra	0.0382311	0.0365908	0.0232061	0.0153086	0.0002564
Tight (MOL) End	0.0290318	0.0337580	0.0326368	0.0050619	0.0002611