

Table 1: Data fake rates for Cut-Based τ ID

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8853493	0.0162714	0.0162902	0.0041470	0.0071888
Loose Cra	0.8897448	0.0167053	0.0178932	0.0156627	0.0027312
Loose End	0.9593787	0.0135410	0.0137083	0.0052369	0.0058024
Loose (TOL) Bar	0.2693396	0.0688041	0.0688481	0.0043122	0.0014094
Loose (TOL) Cra	0.2539353	0.0351045	0.0339968	0.0119021	0.0012396
Loose (TOL) End	0.3403690	0.0669719	0.0675753	0.0075773	0.0010139
Loose (MOL) Bar	0.1282712	0.0049185	0.0052835	0.0033331	0.0006832
Loose (MOL) Cra	0.0960397	0.0070658	0.0078618	0.0070396	0.0003998
Loose (MOL) End	0.1465246	0.0133769	0.0175498	0.0039606	0.0006365
Medium Bar	0.7995695	0.0153818	0.0154156	0.0047037	0.0065574
Medium Cra	0.7796353	0.0210021	0.0201267	0.0180030	0.0018575
Medium End	0.8817658	0.0169268	0.0168926	0.0064752	0.0061225
Medium (TOL) Bar	0.2320561	0.0631067	0.0631406	0.0044754	0.0013560
Medium (TOL) Cra	0.2053529	0.0339109	0.0323028	0.0104049	0.0009460
Medium (TOL) End	0.2833589	0.0574497	0.0577137	0.0054532	0.0016658
Medium (MOL) Bar	0.1063824	0.0043492	0.0047260	0.0033030	0.0006654
Medium (MOL) Cra	0.0758188	0.0063238	0.0063760	0.0061567	0.0003383
Medium (MOL) End	0.1236447	0.0116207	0.0149752	0.0036540	0.0006534
Tight Bar	0.5257785	0.0118541	0.0118808	0.0063484	0.0043792
Tight Cra	0.4366314	0.0174369	0.0190030	0.0152280	0.0015634
Tight End	0.6884407	0.0184718	0.0167412	0.0072289	0.0043739
Tight (TOL) Bar	0.1468995	0.0444400	0.0444637	0.0055865	0.0006292
Tight (TOL) Cra	0.0936880	0.0228323	0.0229813	0.0069167	0.0003922
Tight (TOL) End	0.2106215	0.0491048	0.0484385	0.0176178	0.0008746
Tight (MOL) Bar	0.0655352	0.0034515	0.0037481	0.0029003	0.0002368
Tight (MOL) Cra	0.0296612	0.0045295	0.0052402	0.0037910	0.0001253
Tight (MOL) End	0.0896466	0.0094011	0.0110668	0.0031071	0.0004753

Table 2: Data fake rates for LLH-Based τ ID

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9493069	0.0149144	0.0148937	0.0039321	0.0074199
Loose Cra	0.9065886	0.0174301	0.0184612	0.0165667	0.0026974
Loose End	0.9564536	0.0134056	0.0136589	0.0057348	0.0056081
Loose (TOL) Bar	0.2885289	0.0710409	0.0710666	0.0055809	0.0009733
Loose (TOL) Cra	0.2612333	0.0329558	0.0324637	0.0118615	0.0015052
Loose (TOL) End	0.3396102	0.0667662	0.0674117	0.0089775	0.0007803
Loose (MOL) Bar	0.1397850	0.0058130	0.0060532	0.0041241	0.0005656
Loose (MOL) Cra	0.0970365	0.0070591	0.0077792	0.0070205	0.0004589
Loose (MOL) End	0.1462379	0.0133507	0.0177455	0.0039714	0.0006650
Medium Bar	0.8858168	0.0178393	0.0177926	0.0044770	0.0071623
Medium Cra	0.7514447	0.0191408	0.0180836	0.0179691	0.0013275
Medium End	0.8995831	0.0142641	0.0144509	0.0064241	0.0049292
Medium (TOL) Bar	0.2665489	0.0691570	0.0691789	0.0077803	0.0008194
Medium (TOL) Cra	0.2041434	0.0229319	0.0225700	0.0104808	0.0006741
Medium (TOL) End	0.3158222	0.0643541	0.0647794	0.0101603	0.0000059
Medium (MOL) Bar	0.1261782	0.0043819	0.0046984	0.0033625	0.0008358
Medium (MOL) Cra	0.0786032	0.0067921	0.0073642	0.0062993	0.0003097
Medium (MOL) End	0.1338129	0.0115709	0.0160783	0.0038064	0.0006336
Tight Bar	0.7869737	0.0272440	0.0272153	0.0229653	0.0053687
Tight Cra	0.5788428	0.0303044	0.0316291	0.0167202	0.0012525
Tight End	0.8163318	0.0178275	0.0182714	0.0069467	0.0049674
Tight (TOL) Bar	0.2320035	0.0668708	0.0973917	0.0245011	0.0025589
Tight (TOL) Cra	0.1557212	0.0103997	0.0106127	0.0090437	0.0005407
Tight (TOL) End	0.1754321	0.2297201	0.2034061	0.1255961	0.1095170
Tight (MOL) Bar	0.1086288	0.0047046	0.0051889	0.0040546	0.0007113
Tight (MOL) Cra	0.0597712	0.0067989	0.0074573	0.0054485	0.0002306
Tight (MOL) End	0.1170944	0.0100308	0.0147137	0.0035568	0.0006150

Table 3: Data fake rates for BDT-Based τ ID

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8352431	0.0135759	0.0137438	0.0049055	0.0062136
Loose Cra	0.8654691	0.0225057	0.0233040	0.0165854	0.0014279
Loose End	0.8742537	0.0115479	0.0115894	0.0065568	0.0052274
Loose (TOL) Bar	0.2590727	0.0636603	0.0637086	0.0069772	0.0000796
Loose (TOL) Cra	0.2421865	0.0371480	0.0360187	0.0114829	0.0012113
Loose (TOL) End	0.3106393	0.0621903	0.0620538	0.0113234	0.0005675
Loose (MOL) Bar	0.1249757	0.0057852	0.0061648	0.0047417	0.0000973
Loose (MOL) Cra	0.0889833	0.0068777	0.0071620	0.0067254	0.0003757
Loose (MOL) End	0.1334553	0.0131538	0.0165100	0.0037946	0.0005911
Medium Bar	0.5653651	0.0096235	0.0098190	0.0056000	0.0044903
Medium Cra	0.6938575	0.0337252	0.0333304	0.0302673	0.0004698
Medium End	0.6011903	0.0121713	0.0091635	0.0071903	0.0031439
Medium (TOL) Bar	0.1845300	0.0431710	0.0432188	0.0071950	0.0003561
Medium (TOL) Cra	0.1944660	0.0371819	0.0366803	0.0259306	0.0000956
Medium (TOL) End	0.1539266	0.1525301	0.1349387	0.0941994	0.0627524
Medium (MOL) Bar	0.0909924	0.0035678	0.0042779	0.0029530	0.0004099
Medium (MOL) Cra	0.0752866	0.0064847	0.0069714	0.0061389	0.0002748
Medium (MOL) End	0.0959978	0.0120971	0.0128857	0.0032163	0.0004196
Tight Bar	0.3319769	0.0059667	0.0064047	0.0038150	0.0028800
Tight Cra	0.4677378	0.0197018	0.0198350	0.0156606	0.0012586
Tight End	0.3679889	0.1142463	0.1141280	0.0061903	0.0021660
Tight (TOL) Bar	0.1140227	0.0248662	0.0249331	0.0022848	0.0009406
Tight (TOL) Cra	0.1279651	0.0186466	0.0186159	0.0081482	0.0004451
Tight (TOL) End	0.1326994	0.1348996	0.1566758	0.0037885	0.0005704
Tight (MOL) Bar	0.0567501	0.0024757	0.0028063	0.0020778	0.0003887
Tight (MOL) Cra	0.0489463	0.0050281	0.0053250	0.0049084	0.0001887
Tight (MOL) End	0.0599263	0.0080573	0.0080795	0.0025361	0.0002687

Table 4: Data fake rates for Cut-Based τ ID + Loose Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0757604	0.0188714	0.0188687	0.0027662	0.0001777
Loose Cra	0.0259807	0.0077101	0.0074644	0.0073917	0.0007423
Loose End	0.5702912	0.0263691	0.0283224	0.0078840	0.0025988
Loose (TOL) Bar	0.0592156	0.0208169	0.0208257	0.0025550	0.0000698
Loose (TOL) Cra	0.0193542	0.0071638	0.0069401	0.0067935	0.0008052
Loose (TOL) End	0.1417713	0.0229889	0.0249678	0.0058448	0.0002306
Loose (MOL) Bar	0.0182859	0.0028384	0.0028946	0.0019149	0.0001269
Loose (MOL) Cra	0.0042364	0.0014213	0.0014612	0.0014155	0.0000170
Loose (MOL) End	0.0851089	0.0042284	0.0100177	0.0030185	0.0003489
Medium Bar	0.0700266	0.0181889	0.0181844	0.0026683	0.0002372
Medium Cra	0.0240789	0.0083690	0.0081881	0.0080563	0.0007687
Medium End	0.5532555	0.0266090	0.0281211	0.0070731	0.0029982
Medium (TOL) Bar	0.0548170	0.0198221	0.0198304	0.0024262	0.0001622
Medium (TOL) Cra	0.0183772	0.0077950	0.0075789	0.0074849	0.0008446
Medium (TOL) End	0.1359602	0.0224953	0.0244457	0.0055023	0.0004703
Medium (MOL) Bar	0.0160801	0.0021765	0.0022297	0.0015958	0.0000424
Medium (MOL) Cra	0.0042352	0.0015625	0.0015990	0.0014144	0.0000158
Medium (MOL) End	0.0804170	0.0036937	0.0095276	0.0029407	0.0003834
Tight Bar	0.0478129	0.0140112	0.0139887	0.0021672	0.0001190
Tight Cra	0.0122311	0.0027878	0.0027071	0.0024128	0.0000417
Tight End	0.4501507	0.0227957	0.0247974	0.0066667	0.0028237
Tight (TOL) Bar	0.0376630	0.0151458	0.0151398	0.0019481	0.0000737
Tight (TOL) Cra	0.0103494	0.0025803	0.0024278	0.0022175	0.0000353
Tight (TOL) End	0.1059058	0.0191984	0.0199702	0.0033784	0.0005598
Tight (MOL) Bar	0.0103435	0.0013318	0.0013542	0.0010472	0.0000755
Tight (MOL) Cra	0.0023527	0.0011962	0.0012110	0.0010534	0.0000086
Tight (MOL) End	0.0615400	0.0040714	0.0074492	0.0025686	0.0003070

Table 5: Data fake rates for LLH-Based τ ID + Loose Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0799190	0.0191709	0.0191570	0.0030034	0.0001547
Loose Cra	0.0256757	0.0167416	0.0162444	0.0158626	0.0029225
Loose End	0.5688214	0.0272862	0.0289681	0.0078489	0.0025994
Loose (TOL) Bar	0.0623938	0.0214283	0.0214281	0.0026996	0.0002550
Loose (TOL) Cra	0.0187237	0.0157209	0.0152150	0.0145379	0.0033110
Loose (TOL) End	0.1410816	0.0228433	0.0247480	0.0057224	0.0001850
Loose (MOL) Bar	0.0190957	0.0026610	0.0026687	0.0016904	0.0004399
Loose (MOL) Cra	0.0047070	0.0015014	0.0015481	0.0014919	0.0000188
Loose (MOL) End	0.0840737	0.0040910	0.0096303	0.0030069	0.0003640
Medium Bar	0.0745971	0.0189974	0.0189821	0.0023112	0.0004515
Medium Cra	0.0239559	0.0051649	0.0048228	0.0033925	0.0000460
Medium End	0.5418349	0.0262758	0.0276546	0.0071199	0.0028159
Medium (TOL) Bar	0.0583158	0.0209236	0.0209225	0.0020194	0.0003376
Medium (TOL) Cra	0.0173793	0.0042170	0.0038601	0.0028808	0.0000329
Medium (TOL) End	0.1339815	0.0224167	0.0243933	0.0038126	0.0005922
Medium (MOL) Bar	0.0169431	0.0015193	0.0015350	0.0011452	0.0001020
Medium (MOL) Cra	0.0042352	0.0014476	0.0014868	0.0014147	0.0000158
Medium (MOL) End	0.0788140	0.0037246	0.0095286	0.0029142	0.0003559
Tight Bar	0.0669314	0.0186612	0.0186375	0.0033628	0.0001510
Tight Cra	0.0211482	0.0053653	0.0050781	0.0031842	0.0000511
Tight End	0.5017508	0.0244459	0.0262867	0.0069609	0.0026435
Tight (TOL) Bar	0.0521883	0.0202546	0.0202456	0.0026153	0.0001382
Tight (TOL) Cra	0.0164480	0.0043308	0.0040248	0.0028020	0.0000391
Tight (TOL) End	0.1218878	0.0214537	0.0233363	0.0036325	0.0005770
Tight (MOL) Bar	0.0139164	0.0019145	0.0019095	0.0016816	0.0000055
Tight (MOL) Cra	0.0037644	0.0016210	0.0017721	0.0013334	0.0000138
Tight (MOL) End	0.0709152	0.0039447	0.0093506	0.0027613	0.0003344

Table 6: Data fake rates for BDT-Based τ ID + Loose Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0691908	0.0159383	0.0159353	0.0038386	0.0007333
Loose Cra	0.0268926	0.0082476	0.0078300	0.0077241	0.0012368
Loose End	0.5178737	0.0236978	0.0259108	0.0080465	0.0021715
Loose (TOL) Bar	0.0538272	0.0179154	0.0179202	0.0034555	0.0007828
Loose (TOL) Cra	0.0201537	0.0077286	0.0073234	0.0070248	0.0014121
Loose (TOL) End	0.1309268	0.0212537	0.0231401	0.0068470	0.0005720
Loose (MOL) Bar	0.0168776	0.0028804	0.0029000	0.0021750	0.0007719
Loose (MOL) Cra	0.0051774	0.0016147	0.0016672	0.0015650	0.0000203
Loose (MOL) End	0.0785817	0.0041266	0.0089838	0.0029055	0.0003336
Medium Bar	0.0452374	0.0087298	0.0087250	0.0020968	0.0001212
Medium Cra	0.0253692	0.0059382	0.0073835	0.0034895	0.0000527
Medium End	0.3480240	0.0181944	0.0188171	0.0060377	0.0015268
Medium (TOL) Bar	0.0349030	0.0100634	0.0100735	0.0018220	0.0001265
Medium (TOL) Cra	0.0187905	0.0048341	0.0067134	0.0029951	0.0000375
Medium (TOL) End	0.0490739	0.0975376	0.0858944	0.0631385	0.0414628
Medium (MOL) Bar	0.0120218	0.0013589	0.0013927	0.0011803	0.0002385
Medium (MOL) Cra	0.0042346	0.0018814	0.0018946	0.0014143	0.0000152
Medium (MOL) End	0.0449054	0.0591830	0.0574222	0.0551478	0.0108661
Tight Bar	0.0267113	0.0046499	0.0046648	0.0011028	0.0002147
Tight Cra	0.0164501	0.0038911	0.0040625	0.0028023	0.0000413
Tight End	0.2140760	0.0681968	0.0682013	0.0048153	0.0009681
Tight (TOL) Bar	0.0204368	0.0052006	0.0052184	0.0009948	0.0001377
Tight (TOL) Cra	0.0112800	0.0029915	0.0032330	0.0023150	0.0000282
Tight (TOL) End	0.0585166	0.0591992	0.0701129	0.0025038	0.0002244
Tight (MOL) Bar	0.0077384	0.0008187	0.0009002	0.0006331	0.0000139
Tight (MOL) Cra	0.0018822	0.0009469	0.0009675	0.0009420	0.0000069
Tight (MOL) End	0.0357472	0.0196589	0.0197785	0.0019523	0.0001417

Table 7: Data fake rates for Cut-Based τ ID + Medium Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0199145	0.0030987	0.0031395	0.0019342	0.0001151
Loose Cra	0.0145479	0.0064211	0.0063452	0.0063281	0.0004545
Loose End	0.0563315	0.0047544	0.0045878	0.0024512	0.0002449
Loose (TOL) Bar	0.0157729	0.0034095	0.0034433	0.0018620	0.0001700
Loose (TOL) Cra	0.0112119	0.0061276	0.0061174	0.0060844	0.0005087
Loose (TOL) End	0.0320473	0.0079140	0.0078782	0.0038647	0.0007223
Loose (MOL) Bar	0.0108665	0.0027099	0.0027504	0.0017674	0.0002262
Loose (MOL) Cra	0.0032949	0.0012785	0.0013689	0.0012477	0.0000132
Loose (MOL) End	0.0172053	0.0050213	0.0051895	0.0033884	0.0011751
Medium Bar	0.0175065	0.0025919	0.0026276	0.0015986	0.0000082
Medium Cra	0.0132409	0.0064885	0.0064405	0.0064278	0.0003550
Medium End	0.0525612	0.0040606	0.0039263	0.0023703	0.0002557
Medium (TOL) Bar	0.0138254	0.0028077	0.0028360	0.0014985	0.0000516
Medium (TOL) Cra	0.0104105	0.0061143	0.0061091	0.0060782	0.0003724
Medium (TOL) End	0.0297419	0.0069298	0.0069106	0.0032775	0.0000869
Medium (MOL) Bar	0.0092582	0.0019472	0.0019833	0.0013686	0.0001278
Medium (MOL) Cra	0.0032939	0.0013213	0.0014085	0.0012468	0.0000122
Medium (MOL) End	0.0153575	0.0037964	0.0039096	0.0026137	0.0007123
Tight Bar	0.0102357	0.0014874	0.0014849	0.0009472	0.0000037
Tight Cra	0.0070577	0.0019022	0.0018919	0.0018285	0.0000253
Tight End	0.0388444	0.0038099	0.0030726	0.0020352	0.0001930
Tight (TOL) Bar	0.0083228	0.0016393	0.0016417	0.0008871	0.0000304
Tight (TOL) Cra	0.0065874	0.0018418	0.0018384	0.0017662	0.0000239
Tight (TOL) End	0.0201550	0.0083298	0.0076777	0.0058912	0.0008512
Tight (MOL) Bar	0.0054639	0.0010657	0.0010818	0.0007774	0.0001049
Tight (MOL) Cra	0.0018822	0.0010455	0.0010642	0.0009419	0.0000069
Tight (MOL) End	0.0087972	0.0057040	0.0049593	0.0043868	0.0019160

Table 8: Data fake rates for LLH-Based τ ID + Medium Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0209967	0.0028845	0.0028929	0.0016614	0.0004251
Loose Cra	0.0145405	0.0087192	0.0085726	0.0083861	0.0013994
Loose End	0.0549644	0.0044718	0.0042363	0.0024244	0.0002433
Loose (TOL) Bar	0.0164783	0.0032817	0.0032849	0.0015194	0.0004526
Loose (TOL) Cra	0.0116066	0.0080804	0.0080233	0.0077506	0.0015204
Loose (TOL) End	0.0309632	0.0076121	0.0075402	0.0036037	0.0009662
Loose (MOL) Bar	0.0110325	0.0024478	0.0024546	0.0013396	0.0005541
Loose (MOL) Cra	0.0032942	0.0013165	0.0013939	0.0012471	0.0000124
Loose (MOL) End	0.0158616	0.0040615	0.0043134	0.0029009	0.0014685
Medium Bar	0.0183617	0.0021468	0.0021642	0.0011289	0.0001285
Medium Cra	0.0117522	0.0027624	0.0025095	0.0023641	0.0000316
Medium End	0.0507747	0.0042949	0.0039127	0.0023322	0.0002548
Medium (TOL) Bar	0.0144966	0.0024842	0.0024919	0.0010264	0.0000807
Medium (TOL) Cra	0.0089319	0.0022424	0.0021584	0.0020582	0.0000242
Medium (TOL) End	0.0287776	0.0067114	0.0065831	0.0026397	0.0002109
Medium (MOL) Bar	0.0096312	0.0012950	0.0013151	0.0008439	0.0000206
Medium (MOL) Cra	0.0028233	0.0011732	0.0012917	0.0011543	0.0000104
Medium (MOL) End	0.0144362	0.0034600	0.0034498	0.0021181	0.0008984
Tight Bar	0.0149885	0.0021951	0.0022132	0.0014208	0.0000336
Tight Cra	0.0103461	0.0032163	0.0029936	0.0022171	0.0000320
Tight End	0.0443424	0.0039021	0.0034994	0.0021775	0.0002294
Tight (TOL) Bar	0.0116104	0.0024418	0.0024509	0.0013622	0.0000211
Tight (TOL) Cra	0.0084652	0.0026699	0.0025363	0.0020037	0.0000264
Tight (TOL) End	0.0236798	0.0106446	0.0101625	0.0077553	0.0011075
Tight (MOL) Bar	0.0076070	0.0014275	0.0014398	0.0011020	0.0000725
Tight (MOL) Cra	0.0023528	0.0011963	0.0012111	0.0010534	0.0000087
Tight (MOL) End	0.0089191	0.0086115	0.0075545	0.0057341	0.0038947

Table 9: Data fake rates for BDT-Based τ ID + Medium Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0192904	0.0031770	0.0031858	0.0022654	0.0007842
Loose Cra	0.0148220	0.0050089	0.0048828	0.0048165	0.0006491
Loose End	0.0528689	0.0046259	0.0045191	0.0023779	0.0002484
Loose (TOL) Bar	0.0152828	0.0033984	0.0034018	0.0020973	0.0007948
Loose (TOL) Cra	0.0119449	0.0046124	0.0045775	0.0044398	0.0007134
Loose (TOL) End	0.0297845	0.0080540	0.0080422	0.0042660	0.0008846
Loose (MOL) Bar	0.0102327	0.0025906	0.0026064	0.0017778	0.0008600
Loose (MOL) Cra	0.0037649	0.0013659	0.0014166	0.0013336	0.0000143
Loose (MOL) End	0.0150572	0.0051309	0.0053670	0.0035006	0.0018528
Medium Bar	0.0143414	0.0017004	0.0017268	0.0011826	0.0001644
Medium Cra	0.0131642	0.0036113	0.0040008	0.0025025	0.0000371
Medium End	0.0388218	0.0031626	0.0034143	0.0020350	0.0001704
Medium (TOL) Bar	0.0113712	0.0020200	0.0020503	0.0010916	0.0001705
Medium (TOL) Cra	0.0103424	0.0031840	0.0039298	0.0022153	0.0000283
Medium (TOL) End	0.0158090	0.0123292	0.0108957	0.0084909	0.0062475
Medium (MOL) Bar	0.0075007	0.0011704	0.0012039	0.0009239	0.0002686
Medium (MOL) Cra	0.0028231	0.0014646	0.0014501	0.0011540	0.0000102
Medium (MOL) End	0.0082427	0.0082048	0.0074797	0.0058275	0.0045711
Tight Bar	0.0096905	0.0010099	0.0010989	0.0006632	0.0000799
Tight Cra	0.0075214	0.0020476	0.0019389	0.0018874	0.0000203
Tight End	0.0210913	0.0194535	0.0197188	0.0014964	0.0000851
Tight (TOL) Bar	0.0074646	0.0013329	0.0014122	0.0005860	0.0000545
Tight (TOL) Cra	0.0051710	0.0016363	0.0017141	0.0015631	0.0000139
Tight (TOL) End	0.0120207	0.0122697	0.0128449	0.0011281	0.0000472
Tight (MOL) Bar	0.0049141	0.0007309	0.0008185	0.0004805	0.0000190
Tight (MOL) Cra	0.0004705	0.0006612	0.0007088	0.0004707	0.0000017
Tight (MOL) End	0.0066437	0.0068450	0.0071165	0.0008380	0.0000268

Table 10: Data fake rates for Cut-Based τ ID + Tight Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0069663	0.0023911	0.0024349	0.0015819	0.0001294
Loose Cra	0.0045301	0.0056855	0.0057553	0.0056422	0.0006270
Loose End	0.0370312	0.0040033	0.0035890	0.0019849	0.0001653
Loose (TOL) Bar	0.0061906	0.0023867	0.0024335	0.0015648	0.0001417
Loose (TOL) Cra	0.0045315	0.0056879	0.0057577	0.0056448	0.0006255
Loose (TOL) End	0.0147570	0.0059149	0.0053988	0.0033179	0.0008926
Loose (MOL) Bar	0.0039769	0.0021748	0.0022064	0.0015138	0.0001548
Loose (MOL) Cra	0.0014120	0.0008334	0.0011910	0.0008158	0.0000055
Loose (MOL) End	0.0098040	0.0050226	0.0046885	0.0030904	0.0010142
Medium Bar	0.0056893	0.0018781	0.0019093	0.0012014	0.0000591
Medium Cra	0.0047178	0.0053846	0.0054413	0.0053521	0.0004393
Medium End	0.0355787	0.0034296	0.0030851	0.0019474	0.0001833
Medium (TOL) Bar	0.0051450	0.0018622	0.0018956	0.0011806	0.0000645
Medium (TOL) Cra	0.0047200	0.0053896	0.0054466	0.0053573	0.0004371
Medium (TOL) End	0.0147973	0.0047111	0.0044474	0.0026445	0.0000121
Medium (MOL) Bar	0.0030745	0.0015733	0.0015925	0.0011011	0.0001141
Medium (MOL) Cra	0.0014117	0.0008837	0.0012265	0.0008156	0.0000052
Medium (MOL) End	0.0095000	0.0038423	0.0035659	0.0022696	0.0005830
Tight Bar	0.0035145	0.0009318	0.0009501	0.0005313	0.0000333
Tight Cra	0.0032936	0.0014007	0.0014832	0.0012469	0.0000119
Tight End	0.0273498	0.0024198	0.0019705	0.0017059	0.0001467
Tight (TOL) Bar	0.0031957	0.0009225	0.0009425	0.0005076	0.0000378
Tight (TOL) Cra	0.0032936	0.0014007	0.0014832	0.0012469	0.0000119
Tight (TOL) End	0.0110839	0.0028926	0.0024447	0.0010834	0.0000556
Tight (MOL) Bar	0.0018258	0.0006406	0.0006537	0.0004070	0.0000604
Tight (MOL) Cra	0.0004705	0.0004841	0.0006751	0.0004706	0.0000017
Tight (MOL) End	0.0060465	0.0047261	0.0040984	0.0038979	0.0008855

Table 11: Data fake rates for LLH-Based τ ID + Tight Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0070111	0.0021037	0.0021192	0.0011382	0.0004888
Loose Cra	0.0033953	0.0060566	0.0060778	0.0056131	0.0017618
Loose End	0.0360926	0.0039463	0.0034352	0.0019613	0.0001720
Loose (TOL) Bar	0.0062462	0.0020891	0.0021068	0.0010977	0.0004902
Loose (TOL) Cra	0.0033994	0.0060542	0.0060754	0.0056130	0.0017576
Loose (TOL) End	0.0144426	0.0052841	0.0045770	0.0027592	0.0007869
Loose (MOL) Bar	0.0038010	0.0017940	0.0018007	0.0009591	0.0005103
Loose (MOL) Cra	0.0009412	0.0007851	0.0011724	0.0006658	0.0000035
Loose (MOL) End	0.0093301	0.0038905	0.0035655	0.0023439	0.0009629
Medium Bar	0.0063114	0.0013971	0.0014306	0.0006697	0.0000241
Medium Cra	0.0037609	0.0021800	0.0022114	0.0013322	0.0000104
Medium End	0.0331488	0.0032003	0.0025366	0.0018803	0.0001691
Medium (TOL) Bar	0.0056319	0.0013880	0.0014249	0.0006326	0.0000182
Medium (TOL) Cra	0.0037610	0.0021811	0.0022125	0.0013322	0.0000104
Medium (TOL) End	0.0128895	0.0041622	0.0036304	0.0019631	0.0004494
Medium (MOL) Bar	0.0033212	0.0007737	0.0008028	0.0004926	0.0000021
Medium (MOL) Cra	0.0009411	0.0007669	0.0011601	0.0006658	0.0000035
Medium (MOL) End	0.0081288	0.0032480	0.0027942	0.0016489	0.0006938
Tight Bar	0.0051607	0.0013374	0.0013596	0.0007532	0.0000039
Tight Cra	0.0032923	0.0014016	0.0014242	0.0012464	0.0000105
Tight End	0.0291469	0.0027771	0.0022041	0.0017623	0.0001583
Tight (TOL) Bar	0.0045199	0.0013240	0.0013482	0.0007088	0.0000160
Tight (TOL) Cra	0.0032923	0.0014016	0.0014242	0.0012464	0.0000105
Tight (TOL) End	0.0111165	0.0052432	0.0048822	0.0042116	0.0002269
Tight (MOL) Bar	0.0025175	0.0007788	0.0007923	0.0005488	0.0000423
Tight (MOL) Cra	0.0004705	0.0004841	0.0006751	0.0004707	0.0000017
Tight (MOL) End	0.0056519	0.0053691	0.0043773	0.0035233	0.0017003

Table 12: Data fake rates for BDT-Based τ ID + Tight Cut-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0069408	0.0024104	0.0024311	0.0017186	0.0007837
Loose Cra	0.0043277	0.0033759	0.0034838	0.0032387	0.0008293
Loose End	0.0350353	0.0038252	0.0035736	0.0019321	0.0001650
Loose (TOL) Bar	0.0060725	0.0023796	0.0024030	0.0016613	0.0007987
Loose (TOL) Cra	0.0043315	0.0033711	0.0034794	0.0032350	0.0008256
Loose (TOL) End	0.0133874	0.0062216	0.0058381	0.0034288	0.0015270
Loose (MOL) Bar	0.0037540	0.0019954	0.0020112	0.0014263	0.0007818
Loose (MOL) Cra	0.0009412	0.0007765	0.0011666	0.0006658	0.0000035
Loose (MOL) End	0.0085468	0.0049200	0.0046129	0.0029213	0.0017463
Medium Bar	0.0052591	0.0012734	0.0013086	0.0007889	0.0001749
Medium Cra	0.0032907	0.0022455	0.0032965	0.0012456	0.0000089
Medium End	0.0271177	0.0029086	0.0024844	0.0016985	0.0001247
Medium (TOL) Bar	0.0046689	0.0012504	0.0012889	0.0007509	0.0001814
Medium (TOL) Cra	0.0032907	0.0022457	0.0032964	0.0012456	0.0000089
Medium (TOL) End	0.0059552	0.0106094	0.0080597	0.0056103	0.0055982
Medium (MOL) Bar	0.0026815	0.0006797	0.0007081	0.0006116	0.0002376
Medium (MOL) Cra	0.0004705	0.0007740	0.0008150	0.0004706	0.0000017
Medium (MOL) End	0.0042812	0.0062444	0.0054958	0.0043053	0.0033861
Tight Bar	0.0031706	0.0007728	0.0008344	0.0003791	0.0000269
Tight Cra	0.0018806	0.0009872	0.0016235	0.0009412	0.0000053
Tight End	0.0154030	0.0134478	0.0133214	0.0012780	0.0000685
Tight (TOL) Bar	0.0027176	0.0007625	0.0008279	0.0003509	0.0000231
Tight (TOL) Cra	0.0018806	0.0009872	0.0016235	0.0009412	0.0000053
Tight (TOL) End	0.0068563	0.0071204	0.0072862	0.0008514	0.0000293
Tight (MOL) Bar	0.0014946	0.0003790	0.0004309	0.0002602	0.0000126
Tight (MOL) Cra	0.0004705	0.0006612	0.0007088	0.0004707	0.0000017
Tight (MOL) End	0.0043250	0.0046164	0.0046591	0.0006759	0.0000187

Table 13: Data fake rates for Cut-Based τ ID + Loose BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0164293	0.0034680	0.0035388	0.0018959	0.0002770
Loose Cra	0.0127046	0.0067337	0.0067878	0.0065579	0.0004225
Loose End	0.0528874	0.0054209	0.0055187	0.0044077	0.0005734
Loose (TOL) Bar	0.0154157	0.0034698	0.0035343	0.0018741	0.0003026
Loose (TOL) Cra	0.0122254	0.0066711	0.0067378	0.0065169	0.0004328
Loose (TOL) End	0.0318463	0.0062325	0.0061997	0.0038742	0.0008183
Loose (MOL) Bar	0.0094294	0.0029088	0.0029791	0.0017717	0.0003160
Loose (MOL) Cra	0.0052697	0.0069348	0.0069662	0.0068825	0.0003561
Loose (MOL) End	0.0168212	0.0050172	0.0050762	0.0034552	0.0011391
Medium Bar	0.0104970	0.0023549	0.0024371	0.0013897	0.0001016
Medium Cra	0.0084699	0.0023984	0.0024925	0.0020039	0.0000311
Medium End	0.0405308	0.0024598	0.0027456	0.0020786	0.0001989
Medium (TOL) Bar	0.0097187	0.0023412	0.0024151	0.0013633	0.0001164
Medium (TOL) Cra	0.0079993	0.0022955	0.0024011	0.0019470	0.0000293
Medium (TOL) End	0.0226086	0.0041782	0.0043641	0.0030360	0.0000270
Medium (MOL) Bar	0.0054335	0.0018312	0.0019248	0.0012392	0.0000904
Medium (MOL) Cra	0.0018823	0.0012069	0.0012232	0.0009419	0.0000070
Medium (MOL) End	0.0124067	0.0028618	0.0032209	0.0025149	0.0001971
Tight Bar	0.0054138	0.0011873	0.0012518	0.0006539	0.0000202
Tight Cra	0.0037643	0.0016729	0.0019280	0.0013333	0.0000137
Tight End	0.0210048	0.0022165	0.0016780	0.0014936	0.0001036
Tight (TOL) Bar	0.0050934	0.0011864	0.0012375	0.0006396	0.0000263
Tight (TOL) Cra	0.0032937	0.0015452	0.0018677	0.0012469	0.0000120
Tight (TOL) End	0.0118266	0.0023384	0.0017912	0.0011239	0.0000419
Tight (MOL) Bar	0.0028465	0.0007327	0.0008188	0.0005050	0.0000277
Tight (MOL) Cra	0.0004705	0.0006655	0.0008151	0.0004706	0.0000017
Tight (MOL) End	0.0059738	0.0049746	0.0049233	0.0048758	0.0002230

Table 14: Data fake rates for LLH-Based τ ID + Loose BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0170991	0.0036281	0.0036501	0.0016402	0.0006850
Loose Cra	0.0117661	0.0027265	0.0027798	0.0023661	0.0000456
Loose End	0.0485390	0.0047812	0.0049327	0.0040854	0.0012456
Loose (TOL) Bar	0.0161585	0.0035839	0.0036014	0.0016296	0.0006826
Loose (TOL) Cra	0.0112954	0.0026403	0.0027384	0.0023178	0.0000436
Loose (TOL) End	0.0291319	0.0055331	0.0054886	0.0033369	0.0014321
Loose (MOL) Bar	0.0096156	0.0029037	0.0029346	0.0014383	0.0006687
Loose (MOL) Cra	0.0042351	0.0014506	0.0014797	0.0014145	0.0000157
Loose (MOL) End	0.0150008	0.0041887	0.0041500	0.0026120	0.0013840
Medium Bar	0.0127523	0.0022011	0.0022323	0.0008503	0.0000429
Medium Cra	0.0061153	0.0022012	0.0022580	0.0017012	0.0000206
Medium End	0.0298328	0.0031355	0.0031170	0.0026212	0.0006262
Medium (TOL) Bar	0.0121587	0.0022381	0.0022622	0.0008318	0.0000331
Medium (TOL) Cra	0.0061153	0.0022012	0.0022580	0.0017012	0.0000206
Medium (TOL) End	0.0181657	0.0036553	0.0034736	0.0020193	0.0006349
Medium (MOL) Bar	0.0071797	0.0013437	0.0013665	0.0006730	0.0000058
Medium (MOL) Cra	0.0023521	0.0011013	0.0012649	0.0010531	0.0000079
Medium (MOL) End	0.0095085	0.0029762	0.0028380	0.0017635	0.0009946
Tight Bar	0.0094877	0.0019672	0.0019975	0.0009187	0.0000118
Tight Cra	0.0042351	0.0016497	0.0016649	0.0014147	0.0000157
Tight End	0.0166067	0.0054618	0.0051831	0.0049056	0.0005133
Tight (TOL) Bar	0.0089774	0.0019702	0.0019926	0.0009017	0.0000045
Tight (TOL) Cra	0.0042351	0.0016497	0.0016649	0.0014147	0.0000157
Tight (TOL) End	0.0110790	0.0052644	0.0049932	0.0045931	0.0003694
Tight (MOL) Bar	0.0053269	0.0012350	0.0012583	0.0008040	0.0000173
Tight (MOL) Cra	0.0004706	0.0004925	0.0004856	0.0004707	0.0000017
Tight (MOL) End	0.0071182	0.0041802	0.0040127	0.0037143	0.0001290

Table 15: Data fake rates for BDT-Based τ ID + Loose BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0154984	0.0033461	0.0034046	0.0020113	0.0008486
Loose Cra	0.0092291	0.0022109	0.0022383	0.0021135	0.0001473
Loose End	0.0386878	0.0058011	0.0058244	0.0049929	0.0013290
Loose (TOL) Bar	0.0145361	0.0032989	0.0033533	0.0019657	0.0008229
Loose (TOL) Cra	0.0087450	0.0021442	0.0021407	0.0020595	0.0001627
Loose (TOL) End	0.0222004	0.0056627	0.0054349	0.0039373	0.0014316
Loose (MOL) Bar	0.0089392	0.0025491	0.0026153	0.0016695	0.0007612
Loose (MOL) Cra	0.0026405	0.0011881	0.0011727	0.0011538	0.0001724
Loose (MOL) End	0.0121664	0.0047334	0.0046641	0.0032025	0.0018027
Medium Bar	0.0106306	0.0018559	0.0019420	0.0010589	0.0001477
Medium Cra	0.0061152	0.0024842	0.0026503	0.0017008	0.0000205
Medium End	0.0181403	0.0121024	0.0115407	0.0095998	0.0055967
Medium (TOL) Bar	0.0098774	0.0018499	0.0019269	0.0010243	0.0001374
Medium (TOL) Cra	0.0061152	0.0024841	0.0026503	0.0017008	0.0000205
Medium (TOL) End	0.0100127	0.0090673	0.0082221	0.0067150	0.0042715
Medium (MOL) Bar	0.0061788	0.0010857	0.0011997	0.0008760	0.0001535
Medium (MOL) Cra	0.0018815	0.0021351	0.0021649	0.0009416	0.0000062
Medium (MOL) End	0.0043586	0.0082405	0.0076812	0.0058004	0.0047791
Tight Bar	0.0064262	0.0011405	0.0012223	0.0005422	0.0000490
Tight Cra	0.0023516	0.0011011	0.0012645	0.0010529	0.0000075
Tight End	0.0137139	0.0069141	0.0070567	0.0012055	0.0000599
Tight (TOL) Bar	0.0056541	0.0011383	0.0012085	0.0005097	0.0000404
Tight (TOL) Cra	0.0023516	0.0011011	0.0012645	0.0010529	0.0000075
Tight (TOL) End	0.0080182	0.0053114	0.0054499	0.0009210	0.0000359
Tight (MOL) Bar	0.0033892	0.0007749	0.0008465	0.0003980	0.0000210
Tight (MOL) Cra	0.0004703	0.0006610	0.0005299	0.0004705	0.0000015
Tight (MOL) End	0.0051701	0.0042877	0.0044657	0.0007392	0.0000236

Table 16: Data fake rates for Cut-Based τ ID + Medium BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0053449	0.0028114	0.0028389	0.0016537	0.0004035
Loose Cra	0.0006861	0.0059710	0.0059505	0.0058795	0.0007204
Loose End	0.0096303	0.0038515	0.0038012	0.0031916	0.0009778
Loose (TOL) Bar	0.0051569	0.0027946	0.0028226	0.0016514	0.0004118
Loose (TOL) Cra	0.0006861	0.0059710	0.0059505	0.0058795	0.0007204
Loose (TOL) End	0.0066440	0.0037966	0.0037790	0.0030416	0.0011283
Loose (MOL) Bar	0.0039671	0.0027940	0.0028264	0.0016566	0.0003891
Loose (MOL) Cra	0.0001609	0.0061939	0.0061660	0.0061147	0.0007767
Loose (MOL) End	0.0039102	0.0037163	0.0036645	0.0029760	0.0011313
Medium Bar	0.0035136	0.0018867	0.0019155	0.0011552	0.0001690
Medium Cra	0.0009410	0.0010167	0.0010032	0.0006657	0.0000034
Medium End	0.0067112	0.0024983	0.0024582	0.0022266	0.0003259
Medium (TOL) Bar	0.0033764	0.0018584	0.0018881	0.0011489	0.0001714
Medium (TOL) Cra	0.0009410	0.0010167	0.0010032	0.0006657	0.0000034
Medium (TOL) End	0.0041313	0.0024007	0.0023872	0.0020391	0.0004901
Medium (MOL) Bar	0.0024937	0.0018087	0.0018434	0.0011489	0.0001559
Medium (MOL) Cra	0.0004705	0.0006716	0.0006666	0.0004706	0.0000017
Medium (MOL) End	0.0028215	0.0022252	0.0022129	0.0020109	0.0003294
Tight Bar	0.0015969	0.0007882	0.0007883	0.0004258	0.0000648
Tight Cra	0.0004705	0.0008201	0.0008159	0.0004706	0.0000017
Tight End	0.0041164	0.0009669	0.0009286	0.0006596	0.0000202
Tight (TOL) Bar	0.0015512	0.0007891	0.0007894	0.0004219	0.0000656
Tight (TOL) Cra	0.0004705	0.0008201	0.0008159	0.0004706	0.0000017
Tight (TOL) End	0.0020084	0.0030101	0.0030287	0.0029520	0.0003023
Tight (MOL) Bar	0.0012417	0.0007087	0.0007243	0.0003965	0.0000607
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0015832	0.0004606	0.0004916	0.0004089	0.0000078

Table 17: Data fake rates for LLH-Based τ ID + Medium BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0051553	0.0026372	0.0026414	0.0011732	0.0008625
Loose Cra	0.0014114	0.0014794	0.0014585	0.0008154	0.0000049
Loose End	0.0085526	0.0025152	0.0024073	0.0020218	0.0007951
Loose (TOL) Bar	0.0049976	0.0026174	0.0026218	0.0011852	0.0008855
Loose (TOL) Cra	0.0014114	0.0014794	0.0014585	0.0008154	0.0000049
Loose (TOL) End	0.0059037	0.0022753	0.0022452	0.0017585	0.0009233
Loose (MOL) Bar	0.0035235	0.0025897	0.0025934	0.0011602	0.0009225
Loose (MOL) Cra	0.0004704	0.0006715	0.0006664	0.0004705	0.0000016
Loose (MOL) End	0.0030767	0.0021095	0.0020317	0.0015364	0.0009145
Medium Bar	0.0037492	0.0011142	0.0011389	0.0005025	0.0000681
Medium Cra	0.0004704	0.0008198	0.0008156	0.0004705	0.0000015
Medium End	0.0034916	0.0018306	0.0015662	0.0010487	0.0003945
Medium (TOL) Bar	0.0036115	0.0011294	0.0011544	0.0004952	0.0000711
Medium (TOL) Cra	0.0004704	0.0008198	0.0008156	0.0004705	0.0000015
Medium (TOL) End	0.0023660	0.0015918	0.0013615	0.0008173	0.0003648
Medium (MOL) Bar	0.0026982	0.0010668	0.0010834	0.0004491	0.0000862
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0012587	0.0015518	0.0012970	0.0006929	0.0004218
Tight Bar	0.0024892	0.0011016	0.0011108	0.0005974	0.0001155
Tight Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Tight End	0.0023625	0.0019428	0.0018512	0.0015961	0.0001582
Tight (TOL) Bar	0.0023963	0.0011037	0.0011131	0.0005893	0.0001186
Tight (TOL) Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Tight (TOL) End	0.0015629	0.0018413	0.0017441	0.0014731	0.0002226
Tight (MOL) Bar	0.0016990	0.0010211	0.0010272	0.0005354	0.0001423
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0008694	0.0017125	0.0015831	0.0012834	0.0002859

Table 18: Data fake rates for BDT-Based τ ID + Medium BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0049613	0.0026150	0.0026246	0.0016116	0.0010117
Loose Cra	0.0011007	0.0024314	0.0024317	0.0022610	0.0003057
Loose End	0.0060056	0.0030320	0.0029583	0.0024057	0.0010315
Loose (TOL) Bar	0.0047759	0.0025650	0.0025750	0.0015980	0.0010175
Loose (TOL) Cra	0.0011007	0.0024314	0.0024317	0.0022610	0.0003057
Loose (TOL) End	0.0037245	0.0026464	0.0025722	0.0019456	0.0011069
Loose (MOL) Bar	0.0034336	0.0024688	0.0024799	0.0014884	0.0009676
Loose (MOL) Cra	0.0000000	0.0004688	0.0004688	0.0000000	0.0004688
Loose (MOL) End	0.0020705	0.0027270	0.0025606	0.0017886	0.0012904
Medium Bar	0.0033524	0.0009637	0.0010045	0.0006866	0.0002404
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0021239	0.0041103	0.0039501	0.0034015	0.0019723
Medium (TOL) Bar	0.0032127	0.0009624	0.0010039	0.0006757	0.0002453
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0012832	0.0028356	0.0027316	0.0022429	0.0015526
Medium (MOL) Bar	0.0023623	0.0008082	0.0008477	0.0006280	0.0002424
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0003575	0.0024044	0.0023106	0.0017285	0.0015331
Tight Bar	0.0022061	0.0005216	0.0005929	0.0003225	0.0000055
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0018999	0.0007623	0.0005888	0.0004480	0.0000094
Tight (TOL) Bar	0.0020695	0.0005209	0.0005934	0.0003128	0.0000036
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0013721	0.0006552	0.0004815	0.0003807	0.0000067
Tight (MOL) Bar	0.0015280	0.0004877	0.0005474	0.0002680	0.0000011
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0007388	0.0006926	0.0004687	0.0002793	0.0000036

Table 19: Data fake rates for Cut-Based τ ID + Tight BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0029884	0.0024336	0.0024742	0.0016062	0.0003798
Loose Cra	0.0011696	0.0061641	0.0061571	0.0060736	0.0002369
Loose End	0.0015384	0.0030345	0.0030349	0.0026304	0.0009823
Loose (TOL) Bar	0.0029417	0.0024045	0.0024457	0.0016074	0.0003816
Loose (TOL) Cra	0.0011696	0.0061641	0.0061571	0.0060736	0.0002369
Loose (TOL) End	0.0012027	0.0030292	0.0030303	0.0026047	0.0010029
Loose (MOL) Bar	0.0025171	0.0024817	0.0025117	0.0016224	0.0003571
Loose (MOL) Cra	0.0009408	0.0011666	0.0011549	0.0006655	0.0000031
Loose (MOL) End	0.0009734	0.0029312	0.0029298	0.0026379	0.0008121
Medium Bar	0.0017381	0.0016372	0.0016703	0.0010759	0.0001930
Medium Cra	0.0009411	0.0009892	0.0009753	0.0006657	0.0000034
Medium End	0.0013665	0.0016833	0.0016816	0.0014832	0.0004190
Medium (TOL) Bar	0.0017398	0.0016051	0.0016390	0.0010768	0.0001914
Medium (TOL) Cra	0.0009411	0.0009892	0.0009753	0.0006657	0.0000034
Medium (TOL) End	0.0010328	0.0016711	0.0016703	0.0014532	0.0004376
Medium (MOL) Bar	0.0013921	0.0016431	0.0016673	0.0010815	0.0001797
Medium (MOL) Cra	0.0004705	0.0006717	0.0006666	0.0004706	0.0000017
Medium (MOL) End	0.0009135	0.0015424	0.0015420	0.0014679	0.0002418
Tight Bar	0.0006631	0.0006595	0.0006648	0.0003825	0.0001003
Tight Cra	0.0004705	0.0008201	0.0008159	0.0004706	0.0000017
Tight End	0.0009348	0.0003814	0.0004077	0.0003167	0.0000105
Tight (TOL) Bar	0.0006640	0.0006592	0.0006645	0.0003821	0.0000995
Tight (TOL) Cra	0.0004705	0.0008201	0.0008159	0.0004706	0.0000017
Tight (TOL) End	0.0005687	0.0003446	0.0003823	0.0002586	0.0000615
Tight (MOL) Bar	0.0005845	0.0006544	0.0006607	0.0003645	0.0000892
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0004222	0.0004107	0.0004074	0.0002111	0.0000021

Table 20: Data fake rates for LLH-Based τ ID + Tight BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026215	0.0021795	0.0021782	0.0010862	0.0008365
Loose Cra	0.0014118	0.0010983	0.0010701	0.0008156	0.0000053
Loose End	0.0019915	0.0013509	0.0014457	0.0011664	0.0005293
Loose (TOL) Bar	0.0026014	0.0021511	0.0021496	0.0011080	0.0008566
Loose (TOL) Cra	0.0014118	0.0010983	0.0010701	0.0008156	0.0000053
Loose (TOL) End	0.0016577	0.0013309	0.0014360	0.0011319	0.0005480
Loose (MOL) Bar	0.0019855	0.0021941	0.0021880	0.0010940	0.0008887
Loose (MOL) Cra	0.0004706	0.0006717	0.0006666	0.0004707	0.0000017
Loose (MOL) End	0.0012204	0.0012365	0.0012691	0.0010915	0.0003551
Medium Bar	0.0018117	0.0007045	0.0007223	0.0004136	0.0000745
Medium Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Medium End	0.0005966	0.0007839	0.0007459	0.0004449	0.0001387
Medium (TOL) Bar	0.0018121	0.0007045	0.0007224	0.0004134	0.0000741
Medium (TOL) Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Medium (TOL) End	0.0004914	0.0007704	0.0007343	0.0004228	0.0001388
Medium (MOL) Bar	0.0013888	0.0007010	0.0006962	0.0003854	0.0000932
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0003820	0.0007407	0.0007066	0.0004124	0.0001431
Tight Bar	0.0009782	0.0008831	0.0008843	0.0006270	0.0001895
Tight Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Tight End	0.0005278	0.0005187	0.0004955	0.0002361	0.0000026
Tight (TOL) Bar	0.0009783	0.0008830	0.0008843	0.0006270	0.0001893
Tight (TOL) Cra	0.0004706	0.0006812	0.0006762	0.0004707	0.0000017
Tight (TOL) End	0.0004222	0.0005134	0.0004924	0.0002111	0.0000021
Tight (MOL) Bar	0.0005846	0.0008501	0.0008472	0.0005464	0.0002238
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0003167	0.0004246	0.0004017	0.0001828	0.0000016

Table 21: Data fake rates for BDT-Based τ ID + Tight BDT-Based e-veto

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026237	0.0023562	0.0023627	0.0015007	0.0009241
Loose Cra	0.0014119	0.0010837	0.0010552	0.0008158	0.0000055
Loose End	0.0008233	0.0018752	0.0018135	0.0014752	0.0008572
Loose (TOL) Bar	0.0026275	0.0022930	0.0022997	0.0015027	0.0009204
Loose (TOL) Cra	0.0014119	0.0010837	0.0010552	0.0008158	0.0000055
Loose (TOL) End	0.0007186	0.0018573	0.0017987	0.0014485	0.0008569
Loose (MOL) Bar	0.0020668	0.0022528	0.0022585	0.0014269	0.0008973
Loose (MOL) Cra	0.0004706	0.0006219	0.0006164	0.0004707	0.0000018
Loose (MOL) End	0.0003769	0.0018118	0.0017682	0.0014124	0.0008835
Medium Bar	0.0018574	0.0008232	0.0008599	0.0006386	0.0002982
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0008511	0.0007352	0.0000000	0.0007352
Medium (TOL) Bar	0.0018591	0.0008229	0.0008597	0.0006392	0.0002966
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0007068	0.0006302	0.0000000	0.0006302
Medium (MOL) Bar	0.0013888	0.0007569	0.0007846	0.0005965	0.0003178
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0005762	0.0005252	0.0000000	0.0005252
Tight Bar	0.0012023	0.0003499	0.0004315	0.0002444	0.0000103
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0004222	0.0002634	0.0002196	0.0002111	0.0000021
Tight (TOL) Bar	0.0012026	0.0003500	0.0004317	0.0002443	0.0000099
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0003167	0.0002390	0.0001955	0.0001828	0.0000016
Tight (MOL) Bar	0.0009311	0.0003416	0.0004021	0.0002154	0.0000120
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002111	0.0005933	0.0005790	0.0001493	0.0000010