

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8765350	0.0124593	0.0122321	0.0038412	0.0040624
Loose Cra	0.8862570	0.0143644	0.0150376	0.0117035	0.0042419
Loose End	0.9552996	0.0138224	0.0144346	0.0052921	0.0062084
Loose (TOL) Bar	0.2617559	0.0681887	0.0682068	0.0033768	0.0010436
Loose (TOL) Cra	0.2389677	0.0365895	0.0354984	0.0137043	0.0009792
Loose (TOL) End	0.3385204	0.0685452	0.0698650	0.0058500	0.0013963
Loose (MOL) Bar	0.1231921	0.0048031	0.0049144	0.0023736	0.0004412
Loose (MOL) Cra	0.0832617	0.0152575	0.0146750	0.0092591	0.0011396
Loose (MOL) End	0.1385740	0.0110255	0.0135650	0.0038732	0.0004084
Medium Bar	0.7878157	0.0129047	0.0127799	0.0044008	0.0036384
Medium Cra	0.7821725	0.0170358	0.0163511	0.0141284	0.0048857
Medium End	0.8748240	0.0175732	0.0172982	0.0064114	0.0053373
Medium (TOL) Bar	0.2263916	0.0636503	0.0636506	0.0031985	0.0009232
Medium (TOL) Cra	0.1958937	0.0312720	0.0299666	0.0103464	0.0005778
Medium (TOL) End	0.2779342	0.0576724	0.0588352	0.0053766	0.0010716
Medium (MOL) Bar	0.1025007	0.0041270	0.0040916	0.0021814	0.0003860
Medium (MOL) Cra	0.0642837	0.0105550	0.0096556	0.0059112	0.0002095
Medium (MOL) End	0.1149740	0.0090608	0.0119108	0.0035204	0.0004029
Tight Bar	0.5188306	0.0102989	0.0101686	0.0044565	0.0023216
Tight Cra	0.4243704	0.0182662	0.0180470	0.0130954	0.0028061
Tight End	0.6679734	0.0209093	0.0177951	0.0071210	0.0030781
Tight (TOL) Bar	0.1466268	0.0462623	0.0462696	0.0026083	0.0005964
Tight (TOL) Cra	0.0839571	0.0228801	0.0224054	0.0105998	0.0008860
Tight (TOL) End	0.2020904	0.0465081	0.0469394	0.0115220	0.0000498
Tight (MOL) Bar	0.0635028	0.0026781	0.0026078	0.0017221	0.0002493
Tight (MOL) Cra	0.0233320	0.0078741	0.0076754	0.0042957	0.0000882
Tight (MOL) End	0.0830420	0.0075358	0.0090277	0.0029916	0.0002489

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9489791	0.0123923	0.0122032	0.0037465	0.0044883
Loose Cra	0.9117479	0.0132543	0.0132617	0.0125909	0.0041032
Loose End	0.9572983	0.0138469	0.0139541	0.0055102	0.0053374
Loose (TOL) Bar	0.2823824	0.0706488	0.0706773	0.0035441	0.0011730
Loose (TOL) Cra	0.2405469	0.0440643	0.0425848	0.0282745	0.0082379
Loose (TOL) End	0.3399937	0.0690927	0.0701897	0.0133413	0.0007441
Loose (MOL) Bar	0.1359493	0.0050461	0.0052892	0.0025098	0.0004920
Loose (MOL) Cra	0.0841259	0.0207744	0.0188351	0.0164334	0.0055780
Loose (MOL) End	0.1406436	0.0109598	0.0137637	0.0038823	0.0003524
Medium Bar	0.8845813	0.0135530	0.0132477	0.0041554	0.0041788
Medium Cra	0.7676833	0.0179912	0.0182586	0.0137240	0.0040951
Medium End	0.8992629	0.0170135	0.0165164	0.0062406	0.0043750
Medium (TOL) Bar	0.2621051	0.0686654	0.0686769	0.0034366	0.0011145
Medium (TOL) Cra	0.1974369	0.0208808	0.0202517	0.0093077	0.0007953
Medium (TOL) End	0.3145912	0.0688234	0.0687057	0.0180222	0.0015955
Medium (MOL) Bar	0.1237430	0.0043665	0.0044681	0.0024000	0.0004820
Medium (MOL) Cra	0.0696774	0.0078943	0.0068985	0.0055739	0.0003005
Medium (MOL) End	0.1278411	0.0095635	0.0123173	0.0037132	0.0003036
Tight Bar	0.7837574	0.0137224	0.0132964	0.0045142	0.0035682
Tight Cra	0.5809294	0.0298393	0.0308089	0.0140846	0.0033774
Tight End	0.8117905	0.0202197	0.0192360	0.0068335	0.0039470
Tight (TOL) Bar	0.2311179	0.0653909	0.0654031	0.0032475	0.0009658
Tight (TOL) Cra	0.1407919	0.0127547	0.0110158	0.0079153	0.0007124
Tight (TOL) End	0.1687162	0.2502928	0.2185166	0.1420442	0.1147358
Tight (MOL) Bar	0.1043791	0.0039564	0.0039166	0.0022074	0.0004095
Tight (MOL) Cra	0.0510577	0.0053546	0.0047999	0.0047739	0.0002402
Tight (MOL) End	0.1114877	0.0080121	0.0115406	0.0034711	0.0003176

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8421625	0.0094900	0.0093894	0.0043038	0.0040526
Loose Cra	0.8711296	0.0154681	0.0153431	0.0131280	0.0045808
Loose End	0.8754602	0.0122900	0.0123939	0.0063847	0.0049107
Loose (TOL) Bar	0.2565765	0.0640322	0.0640981	0.0033949	0.0010581
Loose (TOL) Cra	0.2268614	0.0407157	0.0390489	0.0184776	0.0029221
Loose (TOL) End	0.3134968	0.0647971	0.0656848	0.0153334	0.0004986
Loose (MOL) Bar	0.1228382	0.0048784	0.0051615	0.0023882	0.0004583
Loose (MOL) Cra	0.0781524	0.0163458	0.0153522	0.0106874	0.0031556
Loose (MOL) End	0.1296099	0.0099016	0.0130783	0.0037368	0.0003720
Medium Bar	0.5726118	0.0061051	0.0064149	0.0045513	0.0026804
Medium Cra	0.6998576	0.0195342	0.0191596	0.0141181	0.0038789
Medium End	0.6019577	0.0119619	0.0090339	0.0070886	0.0030631
Medium (TOL) Bar	0.1833371	0.0428322	0.0429137	0.0029056	0.0007643
Medium (TOL) Cra	0.1803734	0.0274142	0.0263520	0.0089354	0.0009655
Medium (TOL) End	0.2183683	0.0438875	0.0444109	0.0048180	0.0007043
Medium (MOL) Bar	0.0873810	0.0040916	0.0043810	0.0020195	0.0003378
Medium (MOL) Cra	0.0643796	0.0087171	0.0085367	0.0053629	0.0003054
Medium (MOL) End	0.0932029	0.0078509	0.0106419	0.0031722	0.0003131
Tight Bar	0.3390060	0.0045658	0.0049278	0.0038463	0.0014990
Tight Cra	0.4684798	0.0161393	0.0148809	0.0134439	0.0031683
Tight End	0.3733275	0.0082926	0.0070331	0.0061454	0.0016621
Tight (TOL) Bar	0.1142622	0.0263153	0.0263400	0.0023075	0.0004615
Tight (TOL) Cra	0.1240693	0.0196905	0.0185257	0.0074488	0.0007817
Tight (TOL) End	0.1264874	0.0257998	0.0259575	0.0036904	0.0003316
Tight (MOL) Bar	0.0540484	0.0025082	0.0027250	0.0015891	0.0002086
Tight (MOL) Cra	0.0462245	0.0069435	0.0064644	0.0045442	0.0002678
Tight (MOL) End	0.0556748	0.0055648	0.0067532	0.0024485	0.0001960

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0763815	0.0198900	0.0198811	0.0018792	0.0002824
Loose Cra	0.0338082	0.0047731	0.0044615	0.0038797	0.0002245
Loose End	0.5539008	0.0275492	0.0295288	0.0069466	0.0028327
Loose (TOL) Bar	0.0593923	0.0212176	0.0212059	0.0016590	0.0002196
Loose (TOL) Cra	0.0284684	0.0045773	0.0042355	0.0035600	0.0001874
Loose (TOL) End	0.1328906	0.0210448	0.0227537	0.0037845	0.0004642
Loose (MOL) Bar	0.0177057	0.0027750	0.0027585	0.0022600	0.0000090
Loose (MOL) Cra	0.0057845	0.0020445	0.0017201	0.0016048	0.0000399
Loose (MOL) End	0.0751682	0.0039350	0.0068997	0.0028517	0.0002400
Medium Bar	0.0703823	0.0194577	0.0194441	0.0018107	0.0002655
Medium Cra	0.0307014	0.0044022	0.0043656	0.0037061	0.0002109
Medium End	0.5367320	0.0277445	0.0290129	0.0069013	0.0027752
Medium (TOL) Bar	0.0552080	0.0205838	0.0205711	0.0016041	0.0002090
Medium (TOL) Cra	0.0258068	0.0043890	0.0042157	0.0033965	0.0001771
Medium (TOL) End	0.1257583	0.0203842	0.0221800	0.0036771	0.0004527
Medium (MOL) Bar	0.0159487	0.0019359	0.0019006	0.0016287	0.0000038
Medium (MOL) Cra	0.0048958	0.0018466	0.0016377	0.0014770	0.0000350
Medium (MOL) End	0.0706963	0.0035204	0.0068876	0.0027598	0.0002319
Tight Bar	0.0499067	0.0156535	0.0156390	0.0015266	0.0001942
Tight Cra	0.0164605	0.0028212	0.0028764	0.0027089	0.0001105
Tight End	0.4286338	0.0217976	0.0237029	0.0064653	0.0020210
Tight (TOL) Bar	0.0397572	0.0163426	0.0163255	0.0013623	0.0001542
Tight (TOL) Cra	0.0133460	0.0025639	0.0025591	0.0024387	0.0000893
Tight (TOL) End	0.0965243	0.0178497	0.0188620	0.0032254	0.0003398
Tight (MOL) Bar	0.0105670	0.0009376	0.0008761	0.0007017	0.0000402
Tight (MOL) Cra	0.0026695	0.0012325	0.0011410	0.0010900	0.0000181
Tight (MOL) End	0.0531999	0.0039820	0.0057646	0.0023920	0.0001656

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0827194	0.0206641	0.0206581	0.0019628	0.0003136
Loose Cra	0.0332468	0.0052763	0.0051832	0.0038574	0.0001050
Loose End	0.5555055	0.0274523	0.0289190	0.0069182	0.0027369
Loose (TOL) Bar	0.0638668	0.0221510	0.0221405	0.0017256	0.0002422
Loose (TOL) Cra	0.0276686	0.0055806	0.0053308	0.0035345	0.0001705
Loose (TOL) End	0.1326719	0.0211800	0.0229529	0.0037675	0.0004580
Loose (MOL) Bar	0.0194466	0.0027273	0.0027148	0.0020891	0.0000767
Loose (MOL) Cra	0.0049985	0.0099814	0.0099032	0.0091545	0.0007461
Loose (MOL) End	0.0755850	0.0038875	0.0072276	0.0028498	0.0002316
Medium Bar	0.0774640	0.0203376	0.0203248	0.0019011	0.0002984
Medium Cra	0.0280157	0.0045886	0.0044842	0.0035356	0.0001765
Medium End	0.5292378	0.0267501	0.0277728	0.0069285	0.0025081
Medium (TOL) Bar	0.0602867	0.0217317	0.0217171	0.0016775	0.0002329
Medium (TOL) Cra	0.0231238	0.0044791	0.0043064	0.0032112	0.0001455
Medium (TOL) End	0.1246742	0.0205483	0.0221588	0.0036661	0.0004314
Medium (MOL) Bar	0.0176885	0.0014863	0.0014451	0.0009081	0.0000666
Medium (MOL) Cra	0.0040032	0.0017888	0.0017712	0.0013348	0.0000262
Medium (MOL) End	0.0697190	0.0035669	0.0069119	0.0027414	0.0002111
Tight Bar	0.0694146	0.0196939	0.0196809	0.0018006	0.0002716
Tight Cra	0.0209079	0.0037513	0.0036832	0.0030544	0.0001390
Tight End	0.4862128	0.0251103	0.0264146	0.0067876	0.0022082
Tight (TOL) Bar	0.0543782	0.0209335	0.0209217	0.0015937	0.0002139
Tight (TOL) Cra	0.0173486	0.0035700	0.0035091	0.0027816	0.0001148
Tight (TOL) End	0.0744540	0.1026720	0.0936943	0.0754806	0.0385230
Tight (MOL) Bar	0.0150359	0.0011368	0.0010874	0.0008372	0.0000572
Tight (MOL) Cra	0.0026696	0.0013488	0.0012658	0.0010901	0.0000183
Tight (MOL) End	0.0633217	0.0033471	0.0067960	0.0026130	0.0001907

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0737968	0.0178535	0.0178518	0.0036965	0.0001555
Loose Cra	0.0329033	0.0046767	0.0045829	0.0038339	0.0002033
Loose End	0.5036652	0.0256764	0.0272182	0.0068002	0.0023367
Loose (TOL) Bar	0.0572036	0.0192030	0.0191978	0.0034221	0.0000250
Loose (TOL) Cra	0.0274858	0.0046389	0.0043872	0.0035082	0.0000886
Loose (TOL) End	0.1234784	0.0190940	0.0208550	0.0036421	0.0004048
Loose (MOL) Bar	0.0180690	0.0025444	0.0025527	0.0021642	0.0002949
Loose (MOL) Cra	0.0051068	0.0033754	0.0032349	0.0031989	0.0001959
Loose (MOL) End	0.0705765	0.0036938	0.0068608	0.0027564	0.0002183
Medium Bar	0.0478564	0.0100036	0.0100172	0.0014948	0.0001843
Medium Cra	0.0257950	0.0040856	0.0040782	0.0033921	0.0001653
Medium End	0.2246683	0.5532826	0.5439873	0.5031427	0.1122431
Medium (TOL) Bar	0.0369169	0.0109323	0.0109404	0.0013126	0.0001426
Medium (TOL) Cra	0.0217922	0.0039818	0.0039097	0.0031173	0.0001395
Medium (TOL) End	0.0406485	0.0961423	0.0876923	0.0586467	0.0452267
Medium (MOL) Bar	0.0116280	0.0018003	0.0018093	0.0014753	0.0000118
Medium (MOL) Cra	0.0035583	0.0014361	0.0014399	0.0012584	0.0000232
Medium (MOL) End	0.0380427	0.0232210	0.0189272	0.0023404	0.0125472
Tight Bar	0.0274525	0.0049405	0.0049434	0.0011320	0.0000921
Tight Cra	0.0142346	0.0029480	0.0027955	0.0025187	0.0000941
Tight End	0.2136804	0.0105909	0.0112749	0.0047791	0.0007991
Tight (TOL) Bar	0.0210406	0.0056087	0.0056050	0.0009906	0.0000798
Tight (TOL) Cra	0.0111210	0.0027099	0.0024396	0.0022258	0.0000737
Tight (TOL) End	0.0538250	0.0087500	0.0092429	0.0024049	0.0001530
Tight (MOL) Bar	0.0069113	0.0014798	0.0014900	0.0012850	0.0000447
Tight (MOL) Cra	0.0022246	0.0011951	0.0012603	0.0009950	0.0000151
Tight (MOL) End	0.0307148	0.0022796	0.0031897	0.0018153	0.0001058

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0189434	0.0021783	0.0021827	0.0009386	0.0000694
Loose Cra	0.0164619	0.0031155	0.0031460	0.0027074	0.0001119
Loose End	0.0553905	0.0034436	0.0050992	0.0024461	0.0002306
Loose (TOL) Bar	0.0144003	0.0030717	0.0030588	0.0021529	0.0000245
Loose (TOL) Cra	0.0137920	0.0028670	0.0028114	0.0024780	0.0000934
Loose (TOL) End	0.0322133	0.0049853	0.0058185	0.0018609	0.0001164
Loose (MOL) Bar	0.0105589	0.0025955	0.0025871	0.0021094	0.0000607
Loose (MOL) Cra	0.0035595	0.0017942	0.0016602	0.0012587	0.0000243
Loose (MOL) End	0.0190799	0.0031096	0.0035398	0.0014297	0.0000555
Medium Bar	0.0162826	0.0018143	0.0018057	0.0008712	0.0000519
Medium Cra	0.0146847	0.0027948	0.0031405	0.0025598	0.0001023
Medium End	0.0511094	0.0026900	0.0045288	0.0023451	0.0002007
Medium (TOL) Bar	0.0125879	0.0023121	0.0022921	0.0015041	0.0000207
Medium (TOL) Cra	0.0120151	0.0027434	0.0027509	0.0023150	0.0000840
Medium (TOL) End	0.0286873	0.0040842	0.0050037	0.0017537	0.0000977
Medium (MOL) Bar	0.0092757	0.0017386	0.0017150	0.0014086	0.0000453
Medium (MOL) Cra	0.0031155	0.0013374	0.0011977	0.0011780	0.0000222
Medium (MOL) End	0.0168400	0.0023750	0.0030345	0.0013420	0.0000476
Tight Bar	0.0101483	0.0013266	0.0013050	0.0006877	0.0000389
Tight Cra	0.0080084	0.0019419	0.0025470	0.0018886	0.0000544
Tight End	0.0379839	0.0024182	0.0039760	0.0020200	0.0001478
Tight (TOL) Bar	0.0081000	0.0012751	0.0012338	0.0006143	0.0000310
Tight (TOL) Cra	0.0062288	0.0017655	0.0019947	0.0016655	0.0000424
Tight (TOL) End	0.0200515	0.0037124	0.0041336	0.0014653	0.0000707
Tight (MOL) Bar	0.0060980	0.0007701	0.0007328	0.0005329	0.0000231
Tight (MOL) Cra	0.0017797	0.0009549	0.0009030	0.0008900	0.0000121
Tight (MOL) End	0.0116177	0.0023493	0.0025250	0.0011141	0.0000331

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0214121	0.0024834	0.0025047	0.0009990	0.0000803
Loose Cra	0.0157465	0.0132117	0.0132520	0.0126679	0.0006035
Loose End	0.0553772	0.0033527	0.0052996	0.0024391	0.0002172
Loose (TOL) Bar	0.0161385	0.0031647	0.0031501	0.0018494	0.0000005
Loose (TOL) Cra	0.0129426	0.0125932	0.0125904	0.0117852	0.0007561
Loose (TOL) End	0.0319936	0.0050233	0.0059349	0.0018515	0.0001092
Loose (MOL) Bar	0.0116755	0.0023907	0.0023867	0.0017071	0.0001497
Loose (MOL) Cra	0.0029485	0.0088768	0.0088164	0.0082440	0.0010286
Loose (MOL) End	0.0191835	0.0029310	0.0035080	0.0014321	0.0000529
Medium Bar	0.0187147	0.0020810	0.0020685	0.0009341	0.0000725
Medium Cra	0.0120085	0.0028525	0.0029860	0.0023129	0.0000774
Medium End	0.0508982	0.0030591	0.0048698	0.0023408	0.0002021
Medium (TOL) Bar	0.0142452	0.0023029	0.0022673	0.0008149	0.0000549
Medium (TOL) Cra	0.0097850	0.0029141	0.0029357	0.0020876	0.0000634
Medium (TOL) End	0.0289018	0.0044881	0.0052329	0.0017605	0.0000996
Medium (MOL) Bar	0.0103561	0.0013150	0.0012793	0.0006954	0.0000148
Medium (MOL) Cra	0.0022240	0.0011947	0.0011299	0.0009947	0.0000145
Medium (MOL) End	0.0166259	0.0022815	0.0028205	0.0013335	0.0000460
Tight Bar	0.0154091	0.0017427	0.0017335	0.0008476	0.0000594
Tight Cra	0.0080082	0.0020877	0.0021690	0.0018888	0.0000541
Tight End	0.0452371	0.0026616	0.0042732	0.0022070	0.0001739
Tight (TOL) Bar	0.0118244	0.0018678	0.0018416	0.0007424	0.0000455
Tight (TOL) Cra	0.0062287	0.0020228	0.0020617	0.0016655	0.0000422
Tight (TOL) End	0.0251672	0.0039684	0.0045474	0.0016428	0.0000849
Tight (MOL) Bar	0.0085994	0.0009128	0.0008802	0.0006334	0.0000202
Tight (MOL) Cra	0.0013348	0.0008671	0.0008352	0.0007707	0.0000092
Tight (MOL) End	0.0147076	0.0020128	0.0026068	0.0012542	0.0000408

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0202006	0.0028498	0.0028551	0.0022110	0.0001110
Loose Cra	0.0158105	0.0031438	0.0033818	0.0026719	0.0000975
Loose End	0.0523831	0.0034601	0.0053505	0.0023736	0.0001990
Loose (TOL) Bar	0.0152395	0.0028837	0.0028814	0.0020117	0.0002029
Loose (TOL) Cra	0.0130986	0.0048650	0.0048500	0.0044256	0.0001582
Loose (TOL) End	0.0306019	0.0049548	0.0058622	0.0018112	0.0000992
Loose (MOL) Bar	0.0111467	0.0021641	0.0021797	0.0018288	0.0003539
Loose (MOL) Cra	0.0037224	0.0030280	0.0029409	0.0028835	0.0002547
Loose (MOL) End	0.0185431	0.0028734	0.0034188	0.0014083	0.0000501
Medium Bar	0.0141054	0.0016128	0.0016385	0.0008108	0.0000542
Medium Cra	0.0124552	0.0027484	0.0033076	0.0023558	0.0000822
Medium End	0.0383816	0.0025770	0.0046599	0.0020301	0.0001203
Medium (TOL) Bar	0.0106604	0.0018025	0.0018039	0.0007048	0.0000409
Medium (TOL) Cra	0.0102306	0.0027226	0.0027764	0.0021347	0.0000671
Medium (TOL) End	0.0223814	0.0035133	0.0045627	0.0015479	0.0000624
Medium (MOL) Bar	0.0074395	0.0015879	0.0015919	0.0012757	0.0000267
Medium (MOL) Cra	0.0031136	0.0013690	0.0012567	0.0011771	0.0000204
Medium (MOL) End	0.0141735	0.0018992	0.0028580	0.0012308	0.0000381
Tight Bar	0.0085655	0.0009994	0.0010397	0.0006317	0.0000327
Tight Cra	0.0053384	0.0018069	0.0019525	0.0015417	0.0000357
Tight End	0.0227190	0.0020431	0.0027904	0.0015603	0.0000811
Tight (TOL) Bar	0.0064706	0.0010843	0.0011003	0.0005490	0.0000247
Tight (TOL) Cra	0.0040039	0.0016828	0.0014415	0.0013350	0.0000269
Tight (TOL) End	0.0136484	0.0023830	0.0027486	0.0012081	0.0000444
Tight (MOL) Bar	0.0045181	0.0008151	0.0008232	0.0004609	0.0000265
Tight (MOL) Cra	0.0017797	0.0010356	0.0009879	0.0008900	0.0000121
Tight (MOL) End	0.0081017	0.0013629	0.0017407	0.0009302	0.0000243

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0060697	0.0023524	0.0023532	0.0018858	0.0000517
Loose Cra	0.0048937	0.0015420	0.0014838	0.0014757	0.0000329
Loose End	0.0389427	0.0026005	0.0037193	0.0020476	0.0001501
Loose (TOL) Bar	0.0057495	0.0023951	0.0023962	0.0018849	0.0000472
Loose (TOL) Cra	0.0048937	0.0015420	0.0014838	0.0014757	0.0000329
Loose (TOL) End	0.0186624	0.0032950	0.0039179	0.0014140	0.0000632
Loose (MOL) Bar	0.0039580	0.0022738	0.0022747	0.0018795	0.0000765
Loose (MOL) Cra	0.0008898	0.0008639	0.0007939	0.0006292	0.0000060
Loose (MOL) End	0.0138549	0.0026676	0.0030475	0.0012173	0.0000383
Medium Bar	0.0049688	0.0015682	0.0015699	0.0011692	0.0000859
Medium Cra	0.0044504	0.0015607	0.0015736	0.0014080	0.0000315
Medium End	0.0375570	0.0020695	0.0036924	0.0020092	0.0001461
Medium (TOL) Bar	0.0047397	0.0015932	0.0015949	0.0011622	0.0000832
Medium (TOL) Cra	0.0044504	0.0015607	0.0015736	0.0014080	0.0000315
Medium (TOL) End	0.0178105	0.0025629	0.0035355	0.0013808	0.0000616
Medium (MOL) Bar	0.0032316	0.0013876	0.0013878	0.0011042	0.0001073
Medium (MOL) Cra	0.0008901	0.0006828	0.0006650	0.0006295	0.0000064
Medium (MOL) End	0.0130031	0.0018581	0.0025411	0.0011790	0.0000368
Tight Bar	0.0032584	0.0006628	0.0006641	0.0003895	0.0000123
Tight Cra	0.0017796	0.0009779	0.0012141	0.0008899	0.0000120
Tight End	0.0292352	0.0018764	0.0032419	0.0017710	0.0001142
Tight (TOL) Bar	0.0031188	0.0006614	0.0006628	0.0003811	0.0000118
Tight (TOL) Cra	0.0017796	0.0009779	0.0012141	0.0008899	0.0000120
Tight (TOL) End	0.0133331	0.0023228	0.0029023	0.0011942	0.0000480
Tight (MOL) Bar	0.0022719	0.0004521	0.0004560	0.0003259	0.0000004
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0091671	0.0016776	0.0019249	0.0009894	0.0000269

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0073862	0.0021787	0.0022012	0.0014194	0.0000800
Loose Cra	0.0027946	0.0079357	0.0079331	0.0077206	0.0011824
Loose End	0.0392583	0.0024279	0.0041183	0.0020526	0.0001468
Loose (TOL) Bar	0.0070357	0.0022300	0.0022527	0.0014019	0.0000595
Loose (TOL) Cra	0.0027996	0.0079400	0.0079374	0.0077250	0.0011774
Loose (TOL) End	0.0188743	0.0032359	0.0041303	0.0014209	0.0000625
Loose (MOL) Bar	0.0048693	0.0019399	0.0019653	0.0012845	0.0000926
Loose (MOL) Cra	0.0000000	0.0004419	0.0004419	0.0000000	0.0004419
Loose (MOL) End	0.0140671	0.0023944	0.0029912	0.0012259	0.0000379
Medium Bar	0.0062509	0.0016862	0.0016914	0.0011876	0.0000095
Medium Cra	0.0031133	0.0013740	0.0014503	0.0011770	0.0000201
Medium End	0.0358450	0.0020135	0.0037219	0.0019624	0.0001345
Medium (TOL) Bar	0.0059318	0.0013868	0.0013943	0.0005268	0.0000040
Medium (TOL) Cra	0.0031133	0.0013740	0.0014504	0.0011770	0.0000201
Medium (TOL) End	0.0166352	0.0025101	0.0034173	0.0013342	0.0000553
Medium (MOL) Bar	0.0040224	0.0013473	0.0013503	0.0010276	0.0000585
Medium (MOL) Cra	0.0004448	0.0004640	0.0004575	0.0004448	0.0000029
Medium (MOL) End	0.0120425	0.0017029	0.0023278	0.0011344	0.0000327
Tight Bar	0.0049269	0.0009446	0.0009476	0.0004794	0.0000113
Tight Cra	0.0022247	0.0011166	0.0012843	0.0009951	0.0000152
Tight End	0.0325400	0.0019298	0.0034747	0.0018698	0.0001242
Tight (TOL) Bar	0.0046464	0.0010093	0.0010126	0.0004656	0.0000091
Tight (TOL) Cra	0.0022247	0.0011166	0.0012843	0.0009951	0.0000152
Tight (TOL) End	0.0151440	0.0023261	0.0031698	0.0012731	0.0000520
Tight (MOL) Bar	0.0031292	0.0006325	0.0006348	0.0005004	0.0000242
Tight (MOL) Cra	0.0004449	0.0004642	0.0004577	0.0004450	0.0000031
Tight (MOL) End	0.0108720	0.0014584	0.0021310	0.0010779	0.0000313

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0066018	0.0020682	0.0020756	0.0016110	0.0004006
Loose Cra	0.0031754	0.0028710	0.0028795	0.0028142	0.0003598
Loose End	0.0369120	0.0024883	0.0040847	0.0019908	0.0001387
Loose (TOL) Bar	0.0061915	0.0020999	0.0021077	0.0015876	0.0003936
Loose (TOL) Cra	0.0031777	0.0028694	0.0028777	0.0028126	0.0003574
Loose (TOL) End	0.0180209	0.0030727	0.0040025	0.0013886	0.0000594
Loose (MOL) Bar	0.0043012	0.0018491	0.0018597	0.0014811	0.0004289
Loose (MOL) Cra	0.0000000	0.0005643	0.0005027	0.0000000	0.0004419
Loose (MOL) End	0.0136412	0.0023499	0.0029575	0.0012074	0.0000372
Medium Bar	0.0049739	0.0010447	0.0010553	0.0004816	0.0000120
Medium Cra	0.0031134	0.0012437	0.0013171	0.0011770	0.0000202
Medium End	0.0290069	0.0019845	0.0039627	0.0017639	0.0000984
Medium (TOL) Bar	0.0046492	0.0011070	0.0011178	0.0004656	0.0000118
Medium (TOL) Cra	0.0031134	0.0012437	0.0013171	0.0011770	0.0000202
Medium (TOL) End	0.0149261	0.0022313	0.0035398	0.0012635	0.0000467
Medium (MOL) Bar	0.0031829	0.0008386	0.0008456	0.0003867	0.0000168
Medium (MOL) Cra	0.0004448	0.0004640	0.0004575	0.0004448	0.0000029
Medium (MOL) End	0.0108713	0.0015693	0.0024985	0.0010777	0.0000306
Tight Bar	0.0027930	0.0005689	0.0005868	0.0003606	0.0000106
Tight Cra	0.0004449	0.0006305	0.0005067	0.0004449	0.0000030
Tight End	0.0174912	0.0016289	0.0024188	0.0013684	0.0000611
Tight (TOL) Bar	0.0026533	0.0006060	0.0006234	0.0003515	0.0000101
Tight (TOL) Cra	0.0004449	0.0006305	0.0005067	0.0004449	0.0000030
Tight (TOL) End	0.0095960	0.0016362	0.0022091	0.0010126	0.0000307
Tight (MOL) Bar	0.0018084	0.0005564	0.0005763	0.0002944	0.0000465
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0065023	0.0011915	0.0016553	0.0008331	0.0000192

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0148158	0.0033695	0.0033865	0.0022032	0.0003020
Loose Cra	0.0088980	0.0021646	0.0021610	0.0019898	0.0000601
Loose End	0.0478904	0.0040379	0.0046009	0.0022704	0.0001702
Loose (TOL) Bar	0.0140543	0.0033020	0.0033196	0.0021953	0.0003215
Loose (TOL) Cra	0.0088980	0.0021646	0.0021610	0.0019898	0.0000601
Loose (TOL) End	0.0292153	0.0046909	0.0047768	0.0017703	0.0000943
Loose (MOL) Bar	0.0080422	0.0027465	0.0027633	0.0021174	0.0002586
Loose (MOL) Cra	0.0026695	0.0013471	0.0013321	0.0010899	0.0000181
Loose (MOL) End	0.0146008	0.0028200	0.0027506	0.0012497	0.0000402
Medium Bar	0.0092821	0.0022949	0.0022954	0.0014452	0.0001782
Medium Cra	0.0053402	0.0016226	0.0016231	0.0015424	0.0000375
Medium End	0.0348781	0.0024644	0.0030555	0.0019344	0.0001241
Medium (TOL) Bar	0.0087631	0.0022772	0.0022783	0.0014275	0.0001870
Medium (TOL) Cra	0.0053402	0.0016226	0.0016231	0.0015424	0.0000375
Medium (TOL) End	0.0190875	0.0030969	0.0032946	0.0014292	0.0000632
Medium (MOL) Bar	0.0044088	0.0017089	0.0017109	0.0012857	0.0002286
Medium (MOL) Cra	0.0004450	0.0005139	0.0005080	0.0004451	0.0000031
Medium (MOL) End	0.0095939	0.0016452	0.0018424	0.0010123	0.0000286
Tight Bar	0.0052602	0.0010894	0.0010780	0.0004950	0.0000200
Tight Cra	0.0022246	0.0011248	0.0012914	0.0009950	0.0000151
Tight End	0.0159982	0.0015216	0.0018351	0.0013083	0.0000560
Tight (TOL) Bar	0.0049344	0.0010835	0.0010730	0.0004794	0.0000188
Tight (TOL) Cra	0.0022246	0.0011248	0.0012914	0.0009950	0.0000151
Tight (TOL) End	0.0089573	0.0017694	0.0016675	0.0009782	0.0000297
Tight (MOL) Bar	0.0027930	0.0005834	0.0005843	0.0003606	0.0000106
Tight (MOL) Cra	0.0000000	0.0003436	0.0003436	0.0000000	0.0000000
Tight (MOL) End	0.0043709	0.0010162	0.0009917	0.0006829	0.0000134

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0162015	0.0034114	0.0034341	0.0020039	0.0006785
Loose Cra	0.0093467	0.0021366	0.0021515	0.0020408	0.0000670
Loose End	0.0468017	0.0037706	0.0041422	0.0022402	0.0001442
Loose (TOL) Bar	0.0151741	0.0033052	0.0033284	0.0019128	0.0006857
Loose (TOL) Cra	0.0093467	0.0021366	0.0021515	0.0020408	0.0000670
Loose (TOL) End	0.0280302	0.0041807	0.0043648	0.0017319	0.0000783
Loose (MOL) Bar	0.0087489	0.0025800	0.0026232	0.0017151	0.0006650
Loose (MOL) Cra	0.0035602	0.0013515	0.0013716	0.0012590	0.0000251
Loose (MOL) End	0.0148092	0.0026257	0.0026727	0.0012577	0.0000361
Medium Bar	0.0123471	0.0024686	0.0024726	0.0015916	0.0001274
Medium Cra	0.0062295	0.0017658	0.0018319	0.0016656	0.0000430
Medium End	0.0286735	0.0024599	0.0025062	0.0017530	0.0000839
Medium (TOL) Bar	0.0117733	0.0024428	0.0024482	0.0015608	0.0001447
Medium (TOL) Cra	0.0062295	0.0017658	0.0018319	0.0016656	0.0000430
Medium (TOL) End	0.0177975	0.0028656	0.0027852	0.0013797	0.0000485
Medium (MOL) Bar	0.0071672	0.0017538	0.0017631	0.0013587	0.0000671
Medium (MOL) Cra	0.0022248	0.0011167	0.0011302	0.0009951	0.0000154
Medium (MOL) End	0.0093086	0.0023195	0.0022944	0.0020308	0.0004693
Tight Bar	0.0090955	0.0015400	0.0015475	0.0007004	0.0000063
Tight Cra	0.0048947	0.0015989	0.0017849	0.0014764	0.0000339
Tight End	0.0155668	0.0018838	0.0020084	0.0012905	0.0000498
Tight (TOL) Bar	0.0087665	0.0015215	0.0015303	0.0006889	0.0000018
Tight (TOL) Cra	0.0048947	0.0015989	0.0017849	0.0014764	0.0000339
Tight (TOL) End	0.0098079	0.0018756	0.0019421	0.0010237	0.0000300
Tight (MOL) Bar	0.0052512	0.0007851	0.0007992	0.0004950	0.0000110
Tight (MOL) Cra	0.0017799	0.0009780	0.0009962	0.0008901	0.0000123
Tight (MOL) End	0.0057560	0.0008280	0.0012072	0.0007838	0.0000168

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0141692	0.0031545	0.0031645	0.0022140	0.0006240
Loose Cra	0.0066753	0.0018326	0.0018352	0.0017244	0.0000469
Loose End	0.0360256	0.0034890	0.0037510	0.0019652	0.0001026
Loose (TOL) Bar	0.0132120	0.0031081	0.0031203	0.0021589	0.0006537
Loose (TOL) Cra	0.0066753	0.0018326	0.0018352	0.0017244	0.0000469
Loose (TOL) End	0.0204259	0.0033592	0.0034835	0.0014792	0.0000199
Loose (MOL) Bar	0.0075799	0.0023076	0.0023182	0.0018238	0.0004891
Loose (MOL) Cra	0.0017800	0.0009723	0.0009529	0.0008901	0.0000124
Loose (MOL) End	0.0113951	0.0031904	0.0033149	0.0029225	0.0002959
Medium Bar	0.0092816	0.0020974	0.0020996	0.0015248	0.0001786
Medium Cra	0.0053398	0.0016716	0.0017192	0.0015421	0.0000371
Medium End	0.0206821	0.0019384	0.0026360	0.0014879	0.0000636
Medium (TOL) Bar	0.0086047	0.0020622	0.0020650	0.0014787	0.0002063
Medium (TOL) Cra	0.0053398	0.0016716	0.0017192	0.0015421	0.0000371
Medium (TOL) End	0.0108721	0.0018254	0.0018987	0.0010777	0.0000314
Medium (MOL) Bar	0.0050532	0.0014806	0.0014861	0.0011534	0.0001406
Medium (MOL) Cra	0.0013349	0.0007718	0.0008193	0.0007708	0.0000092
Medium (MOL) End	0.0067146	0.0010096	0.0012676	0.0008466	0.0000189
Tight Bar	0.0055120	0.0016190	0.0016353	0.0013720	0.0000992
Tight Cra	0.0022245	0.0012973	0.0011250	0.0009950	0.0000151
Tight End	0.0132223	0.0015547	0.0018320	0.0011891	0.0000434
Tight (TOL) Bar	0.0051313	0.0015960	0.0016147	0.0013386	0.0001090
Tight (TOL) Cra	0.0022245	0.0012973	0.0011250	0.0009950	0.0000151
Tight (TOL) End	0.0065033	0.0013745	0.0014659	0.0008333	0.0000202
Tight (MOL) Bar	0.0026651	0.0013467	0.0013523	0.0012401	0.0001174
Tight (MOL) Cra	0.0004449	0.0004642	0.0004576	0.0004449	0.0000030
Tight (MOL) End	0.0041579	0.0008261	0.0011688	0.0006661	0.0000130

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0047128	0.0026270	0.0026318	0.0019636	0.0002492
Loose Cra	0.0004449	0.0008255	0.0007353	0.0004449	0.0000030
Loose End	0.0078341	0.0037054	0.0037003	0.0026771	0.0001370
Loose (TOL) Bar	0.0042768	0.0025819	0.0025872	0.0019529	0.0002678
Loose (TOL) Cra	0.0004449	0.0008255	0.0007353	0.0004449	0.0000030
Loose (TOL) End	0.0055987	0.0034910	0.0034560	0.0026077	0.0002468
Loose (MOL) Bar	0.0031173	0.0026749	0.0026783	0.0019956	0.0002216
Loose (MOL) Cra	0.0004449	0.0008256	0.0007353	0.0004449	0.0000030
Loose (MOL) End	0.0040527	0.0034671	0.0033967	0.0025708	0.0000922
Medium Bar	0.0025868	0.0016833	0.0016831	0.0011603	0.0002420
Medium Cra	0.0004450	0.0004643	0.0004578	0.0004451	0.0000031
Medium End	0.0057562	0.0014706	0.0015248	0.0007838	0.0000170
Medium (TOL) Bar	0.0023485	0.0016551	0.0016549	0.0011470	0.0002484
Medium (TOL) Cra	0.0004450	0.0004643	0.0004578	0.0004451	0.0000031
Medium (TOL) End	0.0040504	0.0012894	0.0013122	0.0006573	0.0000117
Medium (MOL) Bar	0.0015604	0.0016768	0.0016756	0.0011304	0.0002481
Medium (MOL) Cra	0.0004450	0.0004643	0.0004578	0.0004451	0.0000031
Medium (MOL) End	0.0027712	0.0012447	0.0012823	0.0005436	0.0000078
Tight Bar	0.0013395	0.0004639	0.0004673	0.0002507	0.0000053
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0020254	0.0007805	0.0007975	0.0004648	0.0000061
Tight (TOL) Bar	0.0012442	0.0004630	0.0004666	0.0002419	0.0000079
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0018122	0.0006761	0.0006352	0.0004396	0.0000054
Tight (MOL) Bar	0.0009267	0.0004511	0.0004553	0.0002082	0.0000008
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0012792	0.0006326	0.0006260	0.0003693	0.0000038

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0051056	0.0024594	0.0024786	0.0014780	0.0006447
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0068206	0.0038485	0.0037849	0.0031744	0.0000877
Loose (TOL) Bar	0.0047324	0.0023693	0.0023895	0.0014093	0.0006470
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0052924	0.0036363	0.0034591	0.0029708	0.0002342
Loose (MOL) Bar	0.0033161	0.0024432	0.0024641	0.0014054	0.0006257
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0038784	0.0020648	0.0017947	0.0006483	0.0000541
Medium Bar	0.0037686	0.0015699	0.0015718	0.0011231	0.0000805
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0020461	0.0023682	0.0022943	0.0019443	0.0008235
Medium (TOL) Bar	0.0035741	0.0015335	0.0015359	0.0011024	0.0000894
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0017317	0.0023386	0.0022260	0.0018896	0.0008190
Medium (MOL) Bar	0.0027990	0.0015423	0.0015433	0.0010758	0.0000298
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0008250	0.0023583	0.0022430	0.0017136	0.0009818
Tight Bar	0.0021948	0.0007915	0.0007878	0.0004352	0.0000311
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0011149	0.0004194	0.0005828	0.0003986	0.0000542
Tight (TOL) Bar	0.0021000	0.0007545	0.0007508	0.0004275	0.0000332
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0008917	0.0004390	0.0004953	0.0003723	0.0000648
Tight (MOL) Bar	0.0016124	0.0008027	0.0008013	0.0003930	0.0000107
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0006916	0.0003920	0.0005021	0.0003217	0.0000523

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048483	0.0022464	0.0022530	0.0016078	0.0004846
Loose Cra	0.0000000	0.0005351	0.0003437	0.0000000	0.0000000
Loose End	0.0054587	0.0030132	0.0030224	0.0028370	0.0004931
Loose (TOL) Bar	0.0044017	0.0021812	0.0021848	0.0015592	0.0005139
Loose (TOL) Cra	0.0000000	0.0005351	0.0003437	0.0000000	0.0000000
Loose (TOL) End	0.0041103	0.0027533	0.0027262	0.0026182	0.0005660
Loose (MOL) Bar	0.0033075	0.0021636	0.0021718	0.0015507	0.0004024
Loose (MOL) Cra	0.0000000	0.0005351	0.0003436	0.0000000	0.0000000
Loose (MOL) End	0.0029081	0.0029185	0.0028668	0.0027682	0.0005992
Medium Bar	0.0029809	0.0013556	0.0013548	0.0009456	0.0001261
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0042330	0.0036920	0.0000000	0.0025507
Medium (TOL) Bar	0.0027323	0.0013190	0.0013176	0.0009148	0.0001429
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0031716	0.0027449	0.0000000	0.0020193
Medium (MOL) Bar	0.0021820	0.0012973	0.0013021	0.0008928	0.0000439
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0023871	0.0021035	0.0000000	0.0015942
Tight Bar	0.0014767	0.0011295	0.0011287	0.0009626	0.0001928
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0019188	0.0005462	0.0006610	0.0004524	0.0000057
Tight (TOL) Bar	0.0014294	0.0011215	0.0011207	0.0009507	0.0001937
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0015990	0.0004778	0.0005586	0.0004129	0.0000047
Tight (MOL) Bar	0.0010972	0.0010721	0.0010687	0.0009139	0.0001085
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0012791	0.0004075	0.0005228	0.0003693	0.0000038

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0025414	0.0024729	0.0024774	0.0019563	0.0002410
Loose Cra	0.0004450	0.0008256	0.0007354	0.0004450	0.0000031
Loose End	0.0022790	0.0028258	0.0028136	0.0023211	0.0003780
Loose (TOL) Bar	0.0022442	0.0024466	0.0024515	0.0019423	0.0002600
Loose (TOL) Cra	0.0004450	0.0008256	0.0007354	0.0004450	0.0000031
Loose (TOL) End	0.0019413	0.0027893	0.0027661	0.0023082	0.0003969
Loose (MOL) Bar	0.0015671	0.0025154	0.0025181	0.0019658	0.0002415
Loose (MOL) Cra	0.0004450	0.0008256	0.0007354	0.0004450	0.0000031
Loose (MOL) End	0.0012579	0.0028491	0.0027962	0.0022870	0.0002300
Medium Bar	0.0012178	0.0014526	0.0014532	0.0011217	0.0002661
Medium Cra	0.0004450	0.0004643	0.0004578	0.0004450	0.0000031
Medium End	0.0020797	0.0016444	0.0016598	0.0015213	0.0000460
Medium (TOL) Bar	0.0010713	0.0014506	0.0014513	0.0011102	0.0002735
Medium (TOL) Cra	0.0004450	0.0004643	0.0004578	0.0004450	0.0000031
Medium (TOL) End	0.0018602	0.0016411	0.0016456	0.0015045	0.0000529
Medium (MOL) Bar	0.0005381	0.0014641	0.0014628	0.0010835	0.0002966
Medium (MOL) Cra	0.0004450	0.0004643	0.0004578	0.0004450	0.0000031
Medium (MOL) End	0.0010307	0.0007109	0.0007268	0.0003371	0.0000321
Tight Bar	0.0006375	0.0002754	0.0002756	0.0001742	0.0000118
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0005330	0.0005264	0.0004944	0.0002384	0.0000015
Tight (TOL) Bar	0.0005394	0.0002719	0.0002723	0.0001613	0.0000171
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0005330	0.0005264	0.0004944	0.0002384	0.0000015
Tight (MOL) Bar	0.0003513	0.0002646	0.0002653	0.0001317	0.0000197
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0003198	0.0005135	0.0004892	0.0001846	0.0000009

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0028207	0.0021920	0.0022279	0.0012939	0.0004719
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0013022	0.0035121	0.0033910	0.0030003	0.0009297
Loose (TOL) Bar	0.0025237	0.0021297	0.0021672	0.0012231	0.0004905
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0010888	0.0033262	0.0032093	0.0028471	0.0009305
Loose (MOL) Bar	0.0018766	0.0021959	0.0022330	0.0012359	0.0004885
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0004865	0.0034310	0.0033017	0.0028083	0.0010015
Medium Bar	0.0015965	0.0012075	0.0012118	0.0008359	0.0001193
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0001385	0.0028907	0.0027968	0.0024348	0.0010305
Medium (TOL) Bar	0.0014935	0.0012023	0.0012072	0.0008203	0.0001296
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000688	0.0026942	0.0025995	0.0022794	0.0009940
Medium (MOL) Bar	0.0013065	0.0012277	0.0012282	0.0008153	0.0000847
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0008151	0.0007580	0.0000000	0.0006377
Tight Bar	0.0008745	0.0004840	0.0004835	0.0003101	0.0000530
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0003198	0.0002644	0.0002218	0.0001846	0.0000009
Tight (TOL) Bar	0.0007776	0.0004789	0.0004785	0.0002969	0.0000572
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0002132	0.0002365	0.0001946	0.0001507	0.0000006
Tight (MOL) Bar	0.0006149	0.0005266	0.0005252	0.0002662	0.0000343
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0001066	0.0002097	0.0001682	0.0001066	0.0000003

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0027334	0.0019537	0.0019612	0.0014136	0.0004200
Loose Cra	0.0000000	0.0005351	0.0003437	0.0000000	0.0000000
Loose End	0.0004924	0.0033774	0.0031205	0.0026225	0.0015269
Loose (TOL) Bar	0.0024130	0.0019123	0.0019196	0.0013621	0.0004622
Loose (TOL) Cra	0.0000000	0.0005351	0.0003437	0.0000000	0.0000000
Loose (TOL) End	0.0004062	0.0032633	0.0030105	0.0025335	0.0015068
Loose (MOL) Bar	0.0018865	0.0019125	0.0019216	0.0013615	0.0003858
Loose (MOL) Cra	0.0000000	0.0005351	0.0003436	0.0000000	0.0000000
Loose (MOL) End	0.0000529	0.0028570	0.0026211	0.0021438	0.0014350
Medium Bar	0.0016094	0.0011421	0.0011413	0.0007267	0.0000601
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0007459	0.0002877	0.0007995	0.0002820	0.0000019
Medium (TOL) Bar	0.0015047	0.0011396	0.0011384	0.0007092	0.0000720
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0006394	0.0002639	0.0006917	0.0002610	0.0000017
Medium (MOL) Bar	0.0013499	0.0009571	0.0009580	0.0002507	0.0000050
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0004262	0.0002499	0.0004941	0.0002131	0.0000011
Tight Bar	0.0007614	0.0010024	0.0010083	0.0008165	0.0001197
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0005330	0.0003222	0.0002841	0.0002384	0.0000016
Tight (TOL) Bar	0.0007633	0.0010059	0.0010117	0.0008213	0.0001178
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0004264	0.0003041	0.0002717	0.0002132	0.0000012
Tight (MOL) Bar	0.0006920	0.0005385	0.0005384	0.0001803	0.0000036
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0003198	0.0002854	0.0002597	0.0001846	0.0000009