

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8866286	0.0125585	0.0125280	0.0041014	0.0040954
Loose Cra	0.8950386	0.0172469	0.0173960	0.0155879	0.0015295
Loose End	0.9624160	0.0100651	0.0102499	0.0052095	0.0030810
Loose (TOL) Bar	0.2771480	0.0741965	0.0742637	0.0045195	0.0006313
Loose (TOL) Cra	0.2528001	0.0310246	0.0294146	0.0154231	0.0007717
Loose (TOL) End	0.3433596	0.0739404	0.0742612	0.0080697	0.0001399
Loose (MOL) Bar	0.1300364	0.0046184	0.0050501	0.0034700	0.0003658
Loose (MOL) Cra	0.0966847	0.0074031	0.0078440	0.0073647	0.0003358
Loose (MOL) End	0.1477953	0.0126615	0.0174020	0.0042211	0.0003249
Medium Bar	0.7975900	0.0125510	0.0124992	0.0047322	0.0037973
Medium Cra	0.7832763	0.0220049	0.0204630	0.0180410	0.0008220
Medium End	0.8817723	0.0145155	0.0141631	0.0066369	0.0038868
Medium (TOL) Bar	0.2380948	0.0682268	0.0682733	0.0045218	0.0007002
Medium (TOL) Cra	0.2040800	0.0287565	0.0266525	0.0106412	0.0007331
Medium (TOL) End	0.2843743	0.0634992	0.0635034	0.0057662	0.0010350
Medium (MOL) Bar	0.1075607	0.0038810	0.0042840	0.0032661	0.0003891
Medium (MOL) Cra	0.0758434	0.0065326	0.0063792	0.0063693	0.0002856
Medium (MOL) End	0.1246572	0.0115616	0.0153578	0.0038947	0.0003898
Tight Bar	0.5106378	0.0110466	0.0109152	0.0045984	0.0025020
Tight Cra	0.4302161	0.0161602	0.0177577	0.0154031	0.0012100
Tight End	0.6762721	0.0170763	0.0151825	0.0075504	0.0026684
Tight (TOL) Bar	0.1488185	0.0482989	0.0483291	0.0069523	0.0001645
Tight (TOL) Cra	0.0921097	0.0162996	0.0168572	0.0070890	0.0003248
Tight (TOL) End	0.2071420	0.0551827	0.0540774	0.0214719	0.0000103
Tight (MOL) Bar	0.0654288	0.0041707	0.0043865	0.0039423	0.0000091
Tight (MOL) Cra	0.0285012	0.0042602	0.0046912	0.0038547	0.0001037
Tight (MOL) End	0.0882978	0.0095087	0.0114123	0.0032787	0.0002701

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9507239	0.0110045	0.0109025	0.0038443	0.0044101
Loose Cra	0.9089384	0.0167205	0.0171274	0.0160665	0.0012305
Loose End	0.9579346	0.0102165	0.0105178	0.0058057	0.0030249
Loose (TOL) Bar	0.2969108	0.0765306	0.0765903	0.0052546	0.0006070
Loose (TOL) Cra	0.2592809	0.0263069	0.0255752	0.0121306	0.0011674
Loose (TOL) End	0.3410175	0.0737431	0.0738650	0.0115761	0.0010468
Loose (MOL) Bar	0.1418469	0.0047807	0.0052461	0.0035482	0.0005251
Loose (MOL) Cra	0.0972329	0.0074744	0.0078713	0.0072708	0.0003769
Loose (MOL) End	0.1473553	0.0124585	0.0174984	0.0042349	0.0003633
Medium Bar	0.8853940	0.0144038	0.0143002	0.0053225	0.0038653
Medium Cra	0.7505807	0.0210370	0.0187466	0.0186097	0.0000736
Medium End	0.8991243	0.0118880	0.0118324	0.0065706	0.0024612
Medium (TOL) Bar	0.2726549	0.0747792	0.0748990	0.0147175	0.0013005
Medium (TOL) Cra	0.2036013	0.0179982	0.0172814	0.0107692	0.0002545
Medium (TOL) End	0.3101073	0.0738704	0.0717880	0.0298090	0.0089933
Medium (MOL) Bar	0.1274733	0.0044447	0.0048837	0.0042458	0.0003138
Medium (MOL) Cra	0.0793652	0.0074733	0.0077606	0.0065526	0.0002577
Medium (MOL) End	0.1347843	0.0110591	0.0161537	0.0040556	0.0003506
Tight Bar	0.7853172	0.0253662	0.0250782	0.0203427	0.0024225
Tight Cra	0.5757457	0.0293254	0.0293212	0.0168888	0.0006950
Tight End	0.8136496	0.0167626	0.0169825	0.0072116	0.0027419
Tight (TOL) Bar	0.2393749	0.0722904	0.0738283	0.0251891	0.0029915
Tight (TOL) Cra	0.1561013	0.0107244	0.0107926	0.0093354	0.0004218
Tight (TOL) End	0.0836023	0.3677782	0.3337763	0.1695249	0.2044015
Tight (MOL) Bar	0.1098467	0.0035164	0.0039984	0.0033025	0.0004152
Tight (MOL) Cra	0.0600319	0.0070096	0.0073462	0.0056580	0.0001942
Tight (MOL) End	0.1170732	0.0102639	0.0151482	0.0037793	0.0003407

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8279387	0.0106007	0.0107792	0.0047825	0.0035112
Loose Cra	0.8649139	0.0224110	0.0224129	0.0169302	0.0001977
Loose End	0.8670037	0.0096823	0.0097839	0.0068197	0.0029922
Loose (TOL) Bar	0.2653444	0.0684561	0.0685561	0.0059461	0.0000232
Loose (TOL) Cra	0.2392226	0.0298317	0.0283102	0.0116800	0.0008859
Loose (TOL) End	0.3047338	0.0719056	0.0694566	0.0276147	0.0069514
Loose (MOL) Bar	0.1260119	0.0044041	0.0050844	0.0035895	0.0000577
Loose (MOL) Cra	0.0880302	0.0069306	0.0070394	0.0069099	0.0003020
Loose (MOL) End	0.1328526	0.0121072	0.0157660	0.0040226	0.0003326
Medium Bar	0.5425111	0.0084984	0.0085299	0.0054355	0.0024850
Medium Cra	0.6880495	0.0297294	0.0293695	0.0266350	0.0016056
Medium End	0.5753493	0.0126650	0.0106455	0.0100828	0.0012553
Medium (TOL) Bar	0.1854628	0.0462012	0.0462820	0.0069606	0.0000972
Medium (TOL) Cra	0.1915906	0.0279915	0.0271977	0.0186639	0.0006001
Medium (TOL) End	0.0958724	0.2422097	0.2098868	0.1273658	0.1152267
Medium (MOL) Bar	0.0897563	0.0029796	0.0037178	0.0027622	0.0002123
Medium (MOL) Cra	0.0747687	0.0068343	0.0071782	0.0063356	0.0002251
Medium (MOL) End	0.0658223	0.0567021	0.0440757	0.0033939	0.0273484
Tight Bar	0.3140506	0.0056201	0.0057683	0.0038745	0.0016260
Tight Cra	0.4601834	0.0198043	0.0198109	0.0158399	0.0007514
Tight End	0.3444213	0.1204987	0.1363321	0.0063613	0.0010413
Tight (TOL) Bar	0.1127041	0.0266003	0.0266733	0.0023842	0.0005607
Tight (TOL) Cra	0.1286328	0.0147706	0.0145262	0.0084353	0.0003367
Tight (TOL) End	0.1260560	0.1288050	0.1461691	0.0039223	0.0002337
Tight (MOL) Bar	0.0551084	0.0020246	0.0023236	0.0018856	0.0002169
Tight (MOL) Cra	0.0498586	0.0054200	0.0055354	0.0051374	0.0001629
Tight (MOL) End	0.0565561	0.0067897	0.0068303	0.0026209	0.0001035

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0775174	0.0209251	0.0209387	0.0028994	0.0000265
Loose Cra	0.0255841	0.0074631	0.0072553	0.0071392	0.0007851
Loose End	0.5589759	0.0257581	0.0284047	0.0082947	0.0007891
Loose (TOL) Bar	0.0610765	0.0226802	0.0226971	0.0026815	0.0000425
Loose (TOL) Cra	0.0199649	0.0070922	0.0068517	0.0065815	0.0008262
Loose (TOL) End	0.1414511	0.0251866	0.0272272	0.0061677	0.0006371
Loose (MOL) Bar	0.0181937	0.0028668	0.0029187	0.0019732	0.0001369
Loose (MOL) Cra	0.0045797	0.0015390	0.0015816	0.0015308	0.0000158
Loose (MOL) End	0.0844927	0.0041513	0.0106394	0.0031993	0.0001727
Medium Bar	0.0717390	0.0201519	0.0201620	0.0027066	0.0000737
Medium Cra	0.0234245	0.0086858	0.0085302	0.0084359	0.0009163
Medium End	0.5420003	0.0258441	0.0279876	0.0083993	0.0012755
Medium (TOL) Bar	0.0567272	0.0216043	0.0216199	0.0024670	0.0000277
Medium (TOL) Cra	0.0188018	0.0083283	0.0080894	0.0079516	0.0009751
Medium (TOL) End	0.1357381	0.0247247	0.0267225	0.0060880	0.0001084
Medium (MOL) Bar	0.0161536	0.0021083	0.0021579	0.0015748	0.0000678
Medium (MOL) Cra	0.0045778	0.0016540	0.0016936	0.0015286	0.0000139
Medium (MOL) End	0.0797486	0.0037076	0.0101824	0.0031130	0.0002126
Tight Bar	0.0481560	0.0156046	0.0155917	0.0025860	0.0000060
Tight Cra	0.0122054	0.0027897	0.0027176	0.0025040	0.0000350
Tight End	0.4328544	0.0210961	0.0244540	0.0069257	0.0015663
Tight (TOL) Bar	0.0386847	0.0165720	0.0165731	0.0023307	0.0000356
Tight (TOL) Cra	0.0106797	0.0027092	0.0025432	0.0023409	0.0000306
Tight (TOL) End	0.1034107	0.0211260	0.0218687	0.0035475	0.0003129
Tight (MOL) Bar	0.0102892	0.0015290	0.0015478	0.0013030	0.0001065
Tight (MOL) Cra	0.0025432	0.0012733	0.0012892	0.0011386	0.0000077
Tight (MOL) End	0.0594878	0.0042812	0.0079802	0.0026869	0.0001648

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0822128	0.0212436	0.0212488	0.0026695	0.0001015
Loose Cra	0.0251073	0.0117309	0.0113539	0.0110752	0.0022761
Loose End	0.5570734	0.0263333	0.0286976	0.0080251	0.0009198
Loose (TOL) Bar	0.0645807	0.0232944	0.0233060	0.0023906	0.0000035
Loose (TOL) Cra	0.0192922	0.0111421	0.0107128	0.0102700	0.0025131
Loose (TOL) End	0.1406694	0.0250337	0.0269781	0.0057266	0.0004620
Loose (MOL) Bar	0.0193081	0.0022774	0.0023164	0.0014122	0.0001274
Loose (MOL) Cra	0.0050874	0.0016483	0.0016973	0.0016123	0.0000164
Loose (MOL) End	0.0835579	0.0040720	0.0102564	0.0031904	0.0001946
Medium Bar	0.0762860	0.0210038	0.0210007	0.0024037	0.0002514
Medium Cra	0.0233567	0.0041355	0.0037679	0.0034767	0.0000301
Medium End	0.5291600	0.0250586	0.0273922	0.0074336	0.0013523
Medium (TOL) Bar	0.0600409	0.0227982	0.0228020	0.0020697	0.0001775
Medium (TOL) Cra	0.0177712	0.0038843	0.0034479	0.0030259	0.0000227
Medium (TOL) End	0.1335353	0.0246460	0.0266752	0.0040414	0.0002976
Medium (MOL) Bar	0.0168602	0.0013607	0.0013753	0.0011888	0.0000362
Medium (MOL) Cra	0.0045782	0.0015474	0.0015897	0.0015291	0.0000143
Medium (MOL) End	0.0782956	0.0037739	0.0101574	0.0030895	0.0001949
Tight Bar	0.0687356	0.0207080	0.0206955	0.0036331	0.0000333
Tight Cra	0.0208289	0.0050883	0.0047828	0.0032808	0.0000379
Tight End	0.4888147	0.0228660	0.0257273	0.0072707	0.0011936
Tight (TOL) Bar	0.0541581	0.0221201	0.0221176	0.0027980	0.0000199
Tight (TOL) Cra	0.0167643	0.0043307	0.0039693	0.0029384	0.0000300
Tight (TOL) End	0.1212041	0.0365680	0.0377885	0.0038482	0.0002855
Tight (MOL) Bar	0.0138683	0.0018513	0.0018418	0.0018042	0.0000429
Tight (MOL) Cra	0.0040693	0.0017183	0.0018804	0.0014413	0.0000125
Tight (MOL) End	0.0700198	0.0041797	0.0099510	0.0029193	0.0001717

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0705376	0.0174407	0.0174719	0.0027619	0.0001735
Loose Cra	0.0234291	0.0170956	0.0166670	0.0161303	0.0034472
Loose End	0.4998908	0.0220243	0.0256181	0.0079213	0.0007878
Loose (TOL) Bar	0.0552304	0.0192971	0.0193249	0.0024682	0.0002637
Loose (TOL) Cra	0.0175115	0.0162334	0.0157489	0.0149474	0.0037867
Loose (TOL) End	0.1288847	0.0232054	0.0252424	0.0076619	0.0007649
Loose (MOL) Bar	0.0168171	0.0020850	0.0021549	0.0014407	0.0003083
Loose (MOL) Cra	0.0055960	0.0017041	0.0017614	0.0016912	0.0000179
Loose (MOL) End	0.0768444	0.0039645	0.0094059	0.0030580	0.0001790
Medium Bar	0.0444054	0.0097089	0.0097156	0.0021385	0.0000904
Medium Cra	0.0243762	0.0080195	0.0079143	0.0035501	0.0000355
Medium End	0.3205038	0.0175796	0.0188584	0.0061615	0.0005660
Medium (TOL) Bar	0.0345811	0.0108274	0.0108408	0.0018569	0.0001216
Medium (TOL) Cra	0.0187887	0.0073601	0.0072296	0.0031105	0.0000260
Medium (TOL) End	0.0239779	0.1331101	0.1143149	0.0719820	0.0628538
Medium (MOL) Bar	0.0116603	0.0012943	0.0013224	0.0011916	0.0001919
Medium (MOL) Cra	0.0045777	0.0022022	0.0022101	0.0015287	0.0000138
Medium (MOL) End	0.0535787	0.0046000	0.0070556	0.0025501	0.0001162
Tight Bar	0.0257821	0.0050248	0.0050404	0.0011469	0.0001191
Tight Cra	0.0157503	0.0032739	0.0033074	0.0028471	0.0000302
Tight End	0.1929745	0.0551929	0.0552772	0.0048523	0.0002942
Tight (TOL) Bar	0.0199568	0.0055869	0.0056046	0.0010368	0.0000693
Tight (TOL) Cra	0.0111776	0.0026088	0.0026423	0.0023941	0.0000214
Tight (TOL) End	0.0549734	0.0558193	0.0636044	0.0025818	0.0000756
Tight (MOL) Bar	0.0073668	0.0007298	0.0007793	0.0006542	0.0000157
Tight (MOL) Cra	0.0020346	0.0010201	0.0010397	0.0010182	0.0000062
Tight (MOL) End	0.0334199	0.0032946	0.0040691	0.0020096	0.0000507

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0198113	0.0032603	0.0033217	0.0019916	0.0001264
Loose Cra	0.0147227	0.0061919	0.0061167	0.0060551	0.0004903
Loose End	0.0551295	0.0049146	0.0046049	0.0025806	0.0001121
Loose (TOL) Bar	0.0158033	0.0035312	0.0035701	0.0019180	0.0001670
Loose (TOL) Cra	0.0116340	0.0059397	0.0059294	0.0058213	0.0005364
Loose (TOL) End	0.0320682	0.0082982	0.0081168	0.0040641	0.0008226
Loose (MOL) Bar	0.0107416	0.0027464	0.0027859	0.0018131	0.0002066
Loose (MOL) Cra	0.0035619	0.0013493	0.0014409	0.0013492	0.0000122
Loose (MOL) End	0.0165308	0.0048818	0.0048617	0.0035510	0.0011704
Medium Bar	0.0175421	0.0027030	0.0027598	0.0015785	0.0000352
Medium Cra	0.0132347	0.0068680	0.0068184	0.0067652	0.0004569
Medium End	0.0510804	0.0043609	0.0041182	0.0024855	0.0001296
Medium (TOL) Bar	0.0139974	0.0028675	0.0029011	0.0014797	0.0000645
Medium (TOL) Cra	0.0106896	0.0065182	0.0065107	0.0064362	0.0004666
Medium (TOL) End	0.0295875	0.0075377	0.0074615	0.0036777	0.0001937
Medium (MOL) Bar	0.0092671	0.0018932	0.0019305	0.0013378	0.0001242
Medium (MOL) Cra	0.0035604	0.0014067	0.0014943	0.0013475	0.0000107
Medium (MOL) End	0.0143703	0.0039447	0.0039657	0.0029490	0.0008192
Tight Bar	0.0100837	0.0016778	0.0016890	0.0010769	0.0000108
Tight Cra	0.0076295	0.0020778	0.0020582	0.0019762	0.0000230
Tight End	0.0366915	0.0045287	0.0037732	0.0021054	0.0000930
Tight (TOL) Bar	0.0084081	0.0017807	0.0017930	0.0010291	0.0000290
Tight (TOL) Cra	0.0071211	0.0020188	0.0020099	0.0019088	0.0000218
Tight (TOL) End	0.0186697	0.0096858	0.0097681	0.0064634	0.0019020
Tight (MOL) Bar	0.0054645	0.0012199	0.0012396	0.0009515	0.0001100
Tight (MOL) Cra	0.0020346	0.0011156	0.0011335	0.0010182	0.0000062
Tight (MOL) End	0.0073265	0.0062982	0.0056236	0.0045441	0.0024810

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0212449	0.0027675	0.0028185	0.0014188	0.0000990
Loose Cra	0.0143578	0.0051936	0.0050869	0.0049944	0.0008551
Loose End	0.0535797	0.0048187	0.0044760	0.0025482	0.0001172
Loose (TOL) Bar	0.0167295	0.0031412	0.0031690	0.0012883	0.0001447
Loose (TOL) Cra	0.0117625	0.0047508	0.0047415	0.0046033	0.0009150
Loose (TOL) End	0.0311769	0.0080375	0.0078396	0.0035761	0.0008767
Loose (MOL) Bar	0.0111456	0.0020795	0.0021094	0.0011100	0.0002044
Loose (MOL) Cra	0.0035607	0.0014988	0.0015705	0.0013479	0.0000110
Loose (MOL) End	0.0154993	0.0038716	0.0039446	0.0028351	0.0012451
Medium Bar	0.0182438	0.0021793	0.0022131	0.0011358	0.0000638
Medium Cra	0.0116872	0.0029011	0.0026639	0.0024492	0.0000239
Medium End	0.0494132	0.0046980	0.0041895	0.0024484	0.0001368
Medium (TOL) Bar	0.0144418	0.0025053	0.0025161	0.0010394	0.0000284
Medium (TOL) Cra	0.0091468	0.0025585	0.0024789	0.0021644	0.0000190
Medium (TOL) End	0.0290558	0.0074194	0.0072834	0.0032715	0.0002470
Medium (MOL) Bar	0.0094789	0.0011335	0.0011506	0.0008532	0.0000129
Medium (MOL) Cra	0.0030520	0.0012723	0.0013915	0.0012476	0.0000094
Medium (MOL) End	0.0137474	0.0036711	0.0035702	0.0025992	0.0010834
Tight Bar	0.0149565	0.0023018	0.0023182	0.0015330	0.0000094
Tight Cra	0.0106756	0.0032665	0.0029983	0.0023404	0.0000266
Tight End	0.0432974	0.0043887	0.0038742	0.0022905	0.0001207
Tight (TOL) Bar	0.0117020	0.0024788	0.0024843	0.0014575	0.0000497
Tight (TOL) Cra	0.0086424	0.0026960	0.0025390	0.0021040	0.0000217
Tight (TOL) End	0.0110463	0.0323265	0.0279714	0.0195846	0.0138311
Tight (MOL) Bar	0.0075484	0.0012801	0.0012847	0.0011789	0.0000851
Tight (MOL) Cra	0.0025434	0.0012734	0.0012893	0.0011387	0.0000079
Tight (MOL) End	0.0044504	0.0158750	0.0140889	0.0098779	0.0078687

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0193612	0.0025429	0.0026304	0.0015312	0.0002752
Loose Cra	0.0129963	0.0090418	0.0089413	0.0086021	0.0017096
Loose End	0.0507269	0.0046686	0.0044434	0.0024798	0.0001349
Loose (TOL) Bar	0.0153471	0.0028464	0.0029012	0.0013985	0.0003218
Loose (TOL) Cra	0.0103526	0.0084297	0.0083944	0.0079665	0.0018178
Loose (TOL) End	0.0294706	0.0083051	0.0082580	0.0043781	0.0005498
Loose (MOL) Bar	0.0101886	0.0018938	0.0019570	0.0011563	0.0003578
Loose (MOL) Cra	0.0040692	0.0014618	0.0015091	0.0014411	0.0000124
Loose (MOL) End	0.0140938	0.0050504	0.0049621	0.0036190	0.0015742
Medium Bar	0.0140155	0.0017475	0.0017989	0.0011933	0.0000966
Medium Cra	0.0127053	0.0045303	0.0044691	0.0025538	0.0000278
Medium End	0.0369217	0.0034603	0.0031666	0.0021132	0.0000840
Medium (TOL) Bar	0.0111265	0.0020546	0.0020951	0.0011014	0.0001230
Medium (TOL) Cra	0.0101633	0.0043472	0.0043413	0.0022817	0.0000213
Medium (TOL) End	0.0178166	0.0108587	0.0094358	0.0079762	0.0038315
Medium (MOL) Bar	0.0072276	0.0011256	0.0011663	0.0009225	0.0002051
Medium (MOL) Cra	0.0030519	0.0017699	0.0017555	0.0012475	0.0000093
Medium (MOL) End	0.0091829	0.0067825	0.0058435	0.0048975	0.0028970
Tight Bar	0.0094349	0.0010811	0.0011506	0.0006905	0.0000436
Tight Cra	0.0071141	0.0020836	0.0019469	0.0019072	0.0000147
Tight End	0.0183283	0.0127782	0.0126131	0.0014854	0.0000291
Tight (TOL) Bar	0.0073105	0.0013808	0.0014419	0.0006128	0.0000285
Tight (TOL) Cra	0.0050815	0.0016968	0.0018001	0.0016104	0.0000105
Tight (TOL) End	0.0112605	0.0110147	0.0109166	0.0011633	0.0000179
Tight (MOL) Bar	0.0047213	0.0006922	0.0007502	0.0004981	0.0000005
Tight (MOL) Cra	0.0005087	0.0007215	0.0007723	0.0005088	0.0000016
Tight (MOL) End	0.0058710	0.0058456	0.0056706	0.0008394	0.0000105

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0067195	0.0025003	0.0025567	0.0016283	0.0001106
Loose Cra	0.0049288	0.0053564	0.0054421	0.0053125	0.0006493
Loose End	0.0348779	0.0035985	0.0028450	0.0020510	0.0000735
Loose (TOL) Bar	0.0060595	0.0024899	0.0025485	0.0016130	0.0001177
Loose (TOL) Cra	0.0049290	0.0053583	0.0054439	0.0053144	0.0006491
Loose (TOL) End	0.0137760	0.0058297	0.0048925	0.0034390	0.0010547
Loose (MOL) Bar	0.0036843	0.0022407	0.0022794	0.0015520	0.0001325
Loose (MOL) Cra	0.0015264	0.0008836	0.0012721	0.0008820	0.0000051
Loose (MOL) End	0.0086241	0.0047341	0.0040925	0.0031988	0.0010638
Medium Bar	0.0056440	0.0019435	0.0019872	0.0011959	0.0000309
Medium Cra	0.0050311	0.0057325	0.0057805	0.0056960	0.0005470
Medium End	0.0333442	0.0033790	0.0028186	0.0020064	0.0000945
Medium (TOL) Bar	0.0051903	0.0019243	0.0019698	0.0011778	0.0000327
Medium (TOL) Cra	0.0050306	0.0057404	0.0057883	0.0057039	0.0005474
Medium (TOL) End	0.0138880	0.0047944	0.0043745	0.0029365	0.0001055
Medium (MOL) Bar	0.0029821	0.0015853	0.0016116	0.0010857	0.0000814
Medium (MOL) Cra	0.0015259	0.0009455	0.0013155	0.0008815	0.0000046
Medium (MOL) End	0.0083179	0.0038617	0.0033845	0.0025376	0.0006523
Tight Bar	0.0034991	0.0011636	0.0011858	0.0007806	0.0000164
Tight Cra	0.0035604	0.0014933	0.0015761	0.0013477	0.0000107
Tight End	0.0249501	0.0024293	0.0018602	0.0017348	0.0000727
Tight (TOL) Bar	0.0031909	0.0011507	0.0011729	0.0007513	0.0000232
Tight (TOL) Cra	0.0035604	0.0014933	0.0015761	0.0013477	0.0000107
Tight (TOL) End	0.0104334	0.0029910	0.0071574	0.0011199	0.0000280
Tight (MOL) Bar	0.0017560	0.0008528	0.0008639	0.0006088	0.0000519
Tight (MOL) Cra	0.0005086	0.0005214	0.0007284	0.0005088	0.0000015
Tight (MOL) End	0.0043663	0.0050609	0.0042184	0.0037727	0.0016138

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0069973	0.0019208	0.0019719	0.0009594	0.0001843
Loose Cra	0.0040231	0.0035014	0.0036359	0.0032465	0.0010479
Loose End	0.0338124	0.0037191	0.0029773	0.0020215	0.0000844
Loose (TOL) Bar	0.0062955	0.0019033	0.0019574	0.0009198	0.0001830
Loose (TOL) Cra	0.0040210	0.0035078	0.0036416	0.0032521	0.0010500
Loose (TOL) End	0.0137033	0.0050707	0.0040494	0.0026195	0.0007686
Loose (MOL) Bar	0.0037232	0.0015008	0.0015379	0.0007661	0.0001940
Loose (MOL) Cra	0.0010173	0.0009243	0.0013188	0.0007197	0.0000031
Loose (MOL) End	0.0084937	0.0035212	0.0029076	0.0021414	0.0008353
Medium Bar	0.0062397	0.0014238	0.0014611	0.0006586	0.0000123
Medium Cra	0.0040654	0.0015347	0.0015788	0.0014399	0.0000086
Medium End	0.0309438	0.0031861	0.0022700	0.0019340	0.0000862
Medium (TOL) Bar	0.0055835	0.0014158	0.0014552	0.0006210	0.0000090
Medium (TOL) Cra	0.0040654	0.0015347	0.0015788	0.0014399	0.0000086
Medium (TOL) End	0.0121025	0.0043340	0.0037263	0.0024317	0.0006950
Medium (MOL) Bar	0.0031580	0.0006977	0.0007288	0.0004731	0.0000059
Medium (MOL) Cra	0.0010173	0.0008341	0.0012573	0.0007197	0.0000031
Medium (MOL) End	0.0070883	0.0030940	0.0025644	0.0019707	0.0009251
Tight Bar	0.0051306	0.0012446	0.0012745	0.0005099	0.0000080
Tight Cra	0.0035589	0.0014961	0.0015187	0.0013472	0.0000092
Tight End	0.0272331	0.0028707	0.0020825	0.0018139	0.0000833
Tight (TOL) Bar	0.0045181	0.0013671	0.0013949	0.0007513	0.0000018
Tight (TOL) Cra	0.0035589	0.0014961	0.0015187	0.0013472	0.0000092
Tight (TOL) End	0.0000000	0.0202350	0.0176138	0.0000000	0.0107643
Tight (MOL) Bar	0.0024391	0.0007113	0.0007249	0.0005746	0.0000217
Tight (MOL) Cra	0.0005087	0.0005214	0.0007284	0.0005088	0.0000016
Tight (MOL) End	0.0038549	0.0069852	0.0057525	0.0045267	0.0027232

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0068366	0.0018668	0.0019457	0.0011084	0.0003450
Loose Cra	0.0030662	0.0063936	0.0064226	0.0058769	0.0020048
Loose End	0.0321372	0.0032946	0.0028325	0.0019705	0.0000837
Loose (TOL) Bar	0.0060252	0.0018417	0.0019249	0.0010614	0.0003528
Loose (TOL) Cra	0.0030667	0.0063934	0.0064224	0.0058770	0.0020043
Loose (TOL) End	0.0119662	0.0060287	0.0053260	0.0034503	0.0015490
Loose (MOL) Bar	0.0035712	0.0013809	0.0014544	0.0008659	0.0003460
Loose (MOL) Cra	0.0010173	0.0008617	0.0012757	0.0007196	0.0000031
Loose (MOL) End	0.0070997	0.0046444	0.0039776	0.0028077	0.0016313
Medium Bar	0.0050912	0.0013212	0.0013836	0.0007839	0.0000815
Medium Cra	0.0035571	0.0038079	0.0039627	0.0013464	0.0000074
Medium End	0.0246989	0.0028757	0.0022061	0.0017263	0.0000607
Medium (TOL) Bar	0.0045346	0.0013055	0.0013709	0.0007457	0.0000858
Medium (TOL) Cra	0.0035571	0.0038079	0.0039627	0.0013464	0.0000074
Medium (TOL) End	0.0077428	0.0076924	0.0056477	0.0046814	0.0030215
Medium (MOL) Bar	0.0024702	0.0006785	0.0007337	0.0005885	0.0001413
Medium (MOL) Cra	0.0005086	0.0008369	0.0008810	0.0005087	0.0000015
Medium (MOL) End	0.0045492	0.0050215	0.0040634	0.0034148	0.0021486
Tight Bar	0.0031798	0.0008220	0.0008819	0.0004007	0.0000159
Tight Cra	0.0020328	0.0010642	0.0017491	0.0010173	0.0000044
Tight End	0.0125845	0.0074370	0.0071002	0.0012303	0.0000262
Tight (TOL) Bar	0.0027760	0.0008148	0.0008769	0.0003744	0.0000139
Tight (TOL) Cra	0.0020328	0.0010642	0.0017491	0.0010173	0.0000044
Tight (TOL) End	0.0061121	0.0064654	0.0062271	0.0008566	0.0000123
Tight (MOL) Bar	0.0014637	0.0003761	0.0004199	0.0002718	0.0000072
Tight (MOL) Cra	0.0005087	0.0007215	0.0007723	0.0005088	0.0000016
Tight (MOL) End	0.0035958	0.0039177	0.0035729	0.0006568	0.0000077

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0159837	0.0037316	0.0037802	0.0019528	0.0001874
Loose Cra	0.0127026	0.0062830	0.0063648	0.0062286	0.0004820
Loose End	0.0466880	0.0052001	0.0054282	0.0045439	0.0007944
Loose (TOL) Bar	0.0152662	0.0037154	0.0037657	0.0019329	0.0002018
Loose (TOL) Cra	0.0121870	0.0062319	0.0063319	0.0061839	0.0004905
Loose (TOL) End	0.0279288	0.0059228	0.0061311	0.0039911	0.0010151
Loose (MOL) Bar	0.0090804	0.0031615	0.0032074	0.0018112	0.0002105
Loose (MOL) Cra	0.0050219	0.0062517	0.0062901	0.0062253	0.0005562
Loose (MOL) End	0.0152159	0.0046052	0.0047323	0.0036188	0.0012893
Medium Bar	0.0102513	0.0023895	0.0024421	0.0013500	0.0000440
Medium Cra	0.0086465	0.0022878	0.0023926	0.0021038	0.0000258
Medium End	0.0353784	0.0023705	0.0028197	0.0020663	0.0000955
Medium (TOL) Bar	0.0096411	0.0023712	0.0024258	0.0013290	0.0000516
Medium (TOL) Cra	0.0081378	0.0021941	0.0023364	0.0020406	0.0000242
Medium (TOL) End	0.0194179	0.0043118	0.0046474	0.0032226	0.0000774
Medium (MOL) Bar	0.0053011	0.0017986	0.0018597	0.0011899	0.0000223
Medium (MOL) Cra	0.0020345	0.0011155	0.0011335	0.0010180	0.0000061
Medium (MOL) End	0.0113258	0.0030087	0.0035181	0.0028046	0.0002757
Tight Bar	0.0052011	0.0013309	0.0013445	0.0007916	0.0000219
Tight Cra	0.0035606	0.0014934	0.0018641	0.0013478	0.0000109
Tight End	0.0167009	0.0020726	0.0016561	0.0014218	0.0000435
Tight (TOL) Bar	0.0049971	0.0013288	0.0013431	0.0007795	0.0000250
Tight (TOL) Cra	0.0030519	0.0013756	0.0018375	0.0012475	0.0000093
Tight (TOL) End	0.0085588	0.0045858	0.0043545	0.0040389	0.0002919
Tight (MOL) Bar	0.0026403	0.0009082	0.0009362	0.0006682	0.0000214
Tight (MOL) Cra	0.0005087	0.0005214	0.0007284	0.0005088	0.0000016
Tight (MOL) End	0.0043773	0.0040486	0.0039203	0.0038841	0.0004069

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0165232	0.0032122	0.0032692	0.0013325	0.0002004
Loose Cra	0.0116369	0.0028485	0.0030166	0.0024511	0.0000264
Loose End	0.0417223	0.0053560	0.0055344	0.0047590	0.0016936
Loose (TOL) Bar	0.0158122	0.0031699	0.0032295	0.0013073	0.0002083
Loose (TOL) Cra	0.0110804	0.0027427	0.0029533	0.0023966	0.0000758
Loose (TOL) End	0.0245237	0.0058061	0.0059006	0.0038172	0.0019086
Loose (MOL) Bar	0.0093555	0.0024832	0.0025622	0.0010987	0.0001865
Loose (MOL) Cra	0.0045773	0.0017284	0.0017509	0.0015286	0.0000134
Loose (MOL) End	0.0132202	0.0039148	0.0039470	0.0028889	0.0016106
Medium Bar	0.0120081	0.0022511	0.0022577	0.0008869	0.0000053
Medium Cra	0.0061020	0.0019230	0.0020147	0.0017662	0.0000168
Medium End	0.0231551	0.0043572	0.0044735	0.0039961	0.0013635
Medium (TOL) Bar	0.0116014	0.0022919	0.0022990	0.0008712	0.0000003
Medium (TOL) Cra	0.0061020	0.0019230	0.0020147	0.0017662	0.0000168
Medium (TOL) End	0.0141457	0.0041651	0.0042905	0.0029782	0.0012830
Medium (MOL) Bar	0.0067041	0.0012945	0.0013022	0.0007118	0.0000255
Medium (MOL) Cra	0.0025425	0.0011820	0.0013523	0.0011383	0.0000070
Medium (MOL) End	0.0076691	0.0034122	0.0035459	0.0025241	0.0016599
Tight Bar	0.0090930	0.0020389	0.0020445	0.0009619	0.0000030
Tight Cra	0.0040695	0.0016244	0.0016431	0.0014413	0.0000127
Tight End	0.0121332	0.0081180	0.0078639	0.0076062	0.0009035
Tight (TOL) Bar	0.0087817	0.0020251	0.0020315	0.0009478	0.0000070
Tight (TOL) Cra	0.0040695	0.0016244	0.0016431	0.0014413	0.0000127
Tight (TOL) End	0.0081059	0.0079048	0.0076264	0.0072702	0.0008643
Tight (MOL) Bar	0.0049617	0.0011943	0.0011859	0.0008265	0.0000101
Tight (MOL) Cra	0.0005087	0.0005314	0.0005230	0.0005088	0.0000016
Tight (MOL) End	0.0050848	0.0057025	0.0051244	0.0047681	0.0010150

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0151316	0.0028337	0.0029449	0.0013906	0.0002863
Loose Cra	0.0080387	0.0068925	0.0069071	0.0068442	0.0005820
Loose End	0.0301070	0.0104432	0.0104271	0.0094587	0.0026642
Loose (TOL) Bar	0.0143649	0.0028032	0.0029179	0.0013613	0.0002996
Loose (TOL) Cra	0.0075043	0.0067474	0.0067595	0.0066985	0.0006093
Loose (TOL) End	0.0165187	0.0086057	0.0082176	0.0066941	0.0024981
Loose (MOL) Bar	0.0087091	0.0020405	0.0021745	0.0010926	0.0002805
Loose (MOL) Cra	0.0017741	0.0048086	0.0048215	0.0047464	0.0007614
Loose (MOL) End	0.0087523	0.0069315	0.0065807	0.0050087	0.0030884
Medium Bar	0.0102037	0.0018947	0.0019616	0.0010530	0.0000413
Medium Cra	0.0055935	0.0032064	0.0032076	0.0016903	0.0000154
Medium End	0.0153486	0.0106210	0.0102798	0.0086683	0.0042663
Medium (TOL) Bar	0.0095848	0.0018843	0.0019529	0.0010246	0.0000576
Medium (TOL) Cra	0.0055935	0.0032064	0.0032076	0.0016903	0.0000154
Medium (TOL) End	0.0089229	0.0073346	0.0066834	0.0055977	0.0027982
Medium (MOL) Bar	0.0058508	0.0011631	0.0012487	0.0008601	0.0000753
Medium (MOL) Cra	0.0015254	0.0017955	0.0017617	0.0008812	0.0000041
Medium (MOL) End	0.0043753	0.0072962	0.0066292	0.0052092	0.0036381
Tight Bar	0.0062021	0.0011958	0.0012282	0.0005627	0.0000249
Tight Cra	0.0020337	0.0010646	0.0013029	0.0010177	0.0000053
Tight End	0.0109081	0.0029063	0.0029994	0.0011453	0.0000243
Tight (TOL) Bar	0.0055951	0.0011958	0.0012298	0.0005353	0.0000205
Tight (TOL) Cra	0.0020337	0.0010646	0.0013029	0.0010177	0.0000053
Tight (TOL) End	0.0059943	0.0019190	0.0020754	0.0008485	0.0000141
Tight (MOL) Bar	0.0033234	0.0007893	0.0008147	0.0004166	0.0000088
Tight (MOL) Cra	0.0005084	0.0007213	0.0005809	0.0005085	0.0000013
Tight (MOL) End	0.0043157	0.0024223	0.0025078	0.0007197	0.0000100

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0049776	0.0029511	0.0029841	0.0016942	0.0002956
Loose Cra	0.0007925	0.0054980	0.0054781	0.0053998	0.0007288
Loose End	0.0086964	0.0036940	0.0036726	0.0033556	0.0009914
Loose (TOL) Bar	0.0048728	0.0029230	0.0029564	0.0016917	0.0003000
Loose (TOL) Cra	0.0007925	0.0054980	0.0054781	0.0053998	0.0007288
Loose (TOL) End	0.0061664	0.0036095	0.0035963	0.0031961	0.0011294
Loose (MOL) Bar	0.0037353	0.0029403	0.0029688	0.0016888	0.0002824
Loose (MOL) Cra	0.0002382	0.0055774	0.0055588	0.0054938	0.0007760
Loose (MOL) End	0.0034334	0.0034901	0.0034108	0.0031202	0.0011115
Medium Bar	0.0033388	0.0018131	0.0018537	0.0011151	0.0000762
Medium Cra	0.0010172	0.0009323	0.0009130	0.0007195	0.0000030
Medium End	0.0059515	0.0026433	0.0026246	0.0024847	0.0002678
Medium (TOL) Bar	0.0032378	0.0017789	0.0018206	0.0011104	0.0000768
Medium (TOL) Cra	0.0010172	0.0009323	0.0009130	0.0007195	0.0000030
Medium (TOL) End	0.0036234	0.0024712	0.0024534	0.0022500	0.0004431
Medium (MOL) Bar	0.0024448	0.0017408	0.0017754	0.0011069	0.0000663
Medium (MOL) Cra	0.0005086	0.0005313	0.0005229	0.0005087	0.0000015
Medium (MOL) End	0.0025238	0.0023348	0.0023097	0.0022636	0.0002271
Tight Bar	0.0015103	0.0008679	0.0008716	0.0005427	0.0000465
Tight Cra	0.0005086	0.0007356	0.0007295	0.0005087	0.0000015
Tight End	0.0034781	0.0008420	0.0007700	0.0006462	0.0000096
Tight (TOL) Bar	0.0014593	0.0008671	0.0008709	0.0005369	0.0000473
Tight (TOL) Cra	0.0005086	0.0007356	0.0007295	0.0005087	0.0000015
Tight (TOL) End	0.0018339	0.0007376	0.0008276	0.0004798	0.0000797
Tight (MOL) Bar	0.0011520	0.0008635	0.0008718	0.0005723	0.0000533
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0013193	0.0004968	0.0004083	0.0003979	0.0000037

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048697	0.0020793	0.0021152	0.0009088	0.0004035
Loose Cra	0.0010169	0.0013605	0.0013473	0.0007193	0.0000027
Loose End	0.0079175	0.0023542	0.0022940	0.0020476	0.0005743
Loose (TOL) Bar	0.0047697	0.0020503	0.0020871	0.0009028	0.0004031
Loose (TOL) Cra	0.0010169	0.0013605	0.0013473	0.0007193	0.0000027
Loose (TOL) End	0.0057685	0.0020334	0.0020459	0.0017330	0.0006900
Loose (MOL) Bar	0.0035019	0.0020489	0.0020778	0.0008589	0.0004153
Loose (MOL) Cra	0.0005084	0.0007264	0.0007202	0.0005085	0.0000013
Loose (MOL) End	0.0029459	0.0017005	0.0016128	0.0014735	0.0006422
Medium Bar	0.0033893	0.0010176	0.0010309	0.0005435	0.0000759
Medium Cra	0.0005084	0.0007353	0.0007292	0.0005085	0.0000013
Medium End	0.0028017	0.0015420	0.0013516	0.0011947	0.0004276
Medium (TOL) Bar	0.0032875	0.0010315	0.0010448	0.0005369	0.0000773
Medium (TOL) Cra	0.0005084	0.0007353	0.0007292	0.0005085	0.0000013
Medium (TOL) End	0.0022895	0.0012484	0.0010728	0.0009189	0.0003417
Medium (MOL) Bar	0.0024701	0.0009728	0.0009804	0.0004869	0.0000912
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0014238	0.0011570	0.0009336	0.0008075	0.0003702
Tight Bar	0.0022350	0.0009006	0.0009093	0.0005997	0.0000751
Tight Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight End	0.0019201	0.0012881	0.0011554	0.0010464	0.0001131
Tight (TOL) Bar	0.0021836	0.0008994	0.0009083	0.0005945	0.0000763
Tight (TOL) Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight (TOL) End	0.0015148	0.0013411	0.0012085	0.0010758	0.0001596
Tight (MOL) Bar	0.0015583	0.0008021	0.0008064	0.0005386	0.0000990
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0009709	0.0012531	0.0010610	0.0009454	0.0002251

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0047771	0.0018962	0.0019663	0.0010280	0.0004459
Loose Cra	0.0000000	0.0010142	0.0010142	0.0000000	0.0010142
Loose End	0.0045503	0.0035539	0.0034674	0.0031605	0.0008318
Loose (TOL) Bar	0.0046243	0.0018316	0.0019047	0.0010180	0.0004480
Loose (TOL) Cra	0.0000000	0.0010142	0.0010142	0.0000000	0.0010142
Loose (TOL) End	0.0031368	0.0027413	0.0026535	0.0023146	0.0008101
Loose (MOL) Bar	0.0033418	0.0018038	0.0018770	0.0009080	0.0004248
Loose (MOL) Cra	0.0000000	0.0005071	0.0005071	0.0000000	0.0005071
Loose (MOL) End	0.0016229	0.0027056	0.0025343	0.0020779	0.0010083
Medium Bar	0.0029867	0.0009134	0.0009713	0.0006546	0.0001270
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0023119	0.0030527	0.0028968	0.0027342	0.0009173
Medium (TOL) Bar	0.0028837	0.0009106	0.0009691	0.0006459	0.0001296
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0017955	0.0018239	0.0016975	0.0015820	0.0005965
Medium (MOL) Bar	0.0021298	0.0008271	0.0008773	0.0005943	0.0001302
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0009348	0.0017346	0.0015930	0.0014086	0.0007396
Tight Bar	0.0021079	0.0004988	0.0005473	0.0003331	0.0000014
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0015590	0.0007068	0.0004593	0.0004325	0.0000042
Tight (TOL) Bar	0.0020066	0.0004968	0.0005459	0.0003253	0.0000022
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0011993	0.0006553	0.0004189	0.0003793	0.0000032
Tight (MOL) Bar	0.0014518	0.0004483	0.0004842	0.0002764	0.0000047
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0008395	0.0006961	0.0003500	0.0003173	0.0000022

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026484	0.0025009	0.0025369	0.0016450	0.0002644
Loose Cra	0.0011274	0.0053071	0.0052965	0.0052544	0.0003939
Loose End	0.0009962	0.0028984	0.0029013	0.0026868	0.0009175
Loose (TOL) Bar	0.0026502	0.0024649	0.0025015	0.0016456	0.0002627
Loose (TOL) Cra	0.0011274	0.0053071	0.0052965	0.0052544	0.0003939
Loose (TOL) End	0.0006113	0.0028731	0.0028802	0.0026483	0.0009436
Loose (MOL) Bar	0.0022631	0.0025317	0.0025566	0.0016506	0.0002480
Loose (MOL) Cra	0.0005849	0.0056214	0.0056162	0.0055989	0.0004293
Loose (MOL) End	0.0004297	0.0027775	0.0027730	0.0026569	0.0007664
Medium Bar	0.0016146	0.0015192	0.0015510	0.0010387	0.0000929
Medium Cra	0.0010172	0.0009323	0.0009131	0.0007196	0.0000030
Medium End	0.0009336	0.0017212	0.0017181	0.0015713	0.0003821
Medium (TOL) Bar	0.0016160	0.0014843	0.0015169	0.0010394	0.0000915
Medium (TOL) Cra	0.0010172	0.0009323	0.0009131	0.0007196	0.0000030
Medium (TOL) End	0.0005531	0.0016887	0.0016895	0.0015249	0.0004038
Medium (MOL) Bar	0.0013200	0.0015096	0.0015320	0.0010414	0.0000862
Medium (MOL) Cra	0.0005086	0.0005313	0.0005229	0.0005087	0.0000015
Medium (MOL) End	0.0005094	0.0015644	0.0015648	0.0015373	0.0002082
Tight Bar	0.0006345	0.0007229	0.0007253	0.0004879	0.0000686
Tight Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight End	0.0007093	0.0003547	0.0004467	0.0002938	0.0000083
Tight (TOL) Bar	0.0006352	0.0007232	0.0007257	0.0004883	0.0000679
Tight (TOL) Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight (TOL) End	0.0002912	0.0007100	0.0007432	0.0006688	0.0000676
Tight (MOL) Bar	0.0005388	0.0007212	0.0007240	0.0004750	0.0000638
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002399	0.0002503	0.0002244	0.0001696	0.0000007

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0025024	0.0015290	0.0015681	0.0008218	0.0003602
Loose Cra	0.0010173	0.0013610	0.0013479	0.0007197	0.0000031
Loose End	0.0018795	0.0010004	0.0011869	0.0009159	0.0002734
Loose (TOL) Bar	0.0025055	0.0014879	0.0015281	0.0008220	0.0003571
Loose (TOL) Cra	0.0010173	0.0013610	0.0013479	0.0007197	0.0000031
Loose (TOL) End	0.0014900	0.0009750	0.0011853	0.0008771	0.0003040
Loose (MOL) Bar	0.0020503	0.0015291	0.0015591	0.0007905	0.0003603
Loose (MOL) Cra	0.0005086	0.0007267	0.0007205	0.0005087	0.0000015
Loose (MOL) End	0.0010994	0.0008003	0.0009025	0.0007918	0.0000966
Medium Bar	0.0015466	0.0005855	0.0006038	0.0004586	0.0000605
Medium Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Medium End	0.0006694	0.0006494	0.0006397	0.0004866	0.0000482
Medium (TOL) Bar	0.0015469	0.0005856	0.0006039	0.0004585	0.0000602
Medium (TOL) Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Medium (TOL) End	0.0005477	0.0006139	0.0006049	0.0004462	0.0000503
Medium (MOL) Bar	0.0011775	0.0005620	0.0005649	0.0004119	0.0000780
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0005468	0.0006364	0.0006314	0.0005308	0.0000512
Tight Bar	0.0008561	0.0006409	0.0006435	0.0006086	0.0000981
Tight Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight End	0.0004798	0.0004185	0.0003800	0.0002399	0.0000013
Tight (TOL) Bar	0.0008562	0.0006409	0.0006435	0.0006086	0.0000980
Tight (TOL) Cra	0.0005087	0.0007356	0.0007295	0.0005088	0.0000016
Tight (TOL) End	0.0003598	0.0004032	0.0003682	0.0002078	0.0000010
Tight (MOL) Bar	0.0005254	0.0005726	0.0005725	0.0005283	0.0001275
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0003598	0.0003280	0.0002838	0.0002078	0.0000010

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0024850	0.0014966	0.0015783	0.0009323	0.0004278
Loose Cra	0.0010174	0.0011626	0.0011472	0.0007197	0.0000032
Loose End	0.0005483	0.0018427	0.0017781	0.0015475	0.0005281
Loose (TOL) Bar	0.0024871	0.0014231	0.0015090	0.0009331	0.0004258
Loose (TOL) Cra	0.0010174	0.0011626	0.0011472	0.0007197	0.0000032
Loose (TOL) End	0.0004350	0.0017634	0.0017032	0.0014619	0.0005218
Loose (MOL) Bar	0.0019438	0.0014174	0.0014971	0.0008545	0.0004166
Loose (MOL) Cra	0.0005087	0.0007267	0.0007206	0.0005088	0.0000016
Loose (MOL) End	0.0001802	0.0016314	0.0015836	0.0013651	0.0005374
Medium Bar	0.0017029	0.0007028	0.0007625	0.0006100	0.0001553
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0002611	0.0009626	0.0008857	0.0008055	0.0003369
Medium (TOL) Bar	0.0017045	0.0007031	0.0007629	0.0006106	0.0001537
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0001741	0.0008187	0.0007503	0.0006707	0.0003044
Medium (MOL) Bar	0.0012762	0.0006670	0.0007103	0.0005628	0.0001802
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0004797	0.0005643	0.0005387	0.0002399	0.0000013
Tight Bar	0.0011419	0.0002817	0.0003366	0.0002516	0.0000132
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0003598	0.0004919	0.0004637	0.0002077	0.0000010
Tight (TOL) Bar	0.0011421	0.0002818	0.0003367	0.0002514	0.0000130
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0002399	0.0004815	0.0004565	0.0001696	0.0000007
Tight (MOL) Bar	0.0008891	0.0002578	0.0002917	0.0002226	0.0000149
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002399	0.0003877	0.0003562	0.0001696	0.0000006