

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8866009	0.0147354	0.0147691	0.0041083	0.0056144
Loose Cra	0.8922230	0.0170433	0.0180301	0.0160216	0.0023803
Loose End	0.9613282	0.0113045	0.0114326	0.0051029	0.0042289
Loose (TOL) Bar	0.2712916	0.0701044	0.0701604	0.0043514	0.0009827
Loose (TOL) Cra	0.2514919	0.0333358	0.0319532	0.0121511	0.0011343
Loose (TOL) End	0.3405276	0.0688504	0.0694930	0.0076450	0.0003708
Loose (MOL) Bar	0.1287216	0.0047255	0.0051481	0.0033472	0.0005639
Loose (MOL) Cra	0.0957439	0.0071856	0.0078315	0.0071598	0.0003695
Loose (MOL) End	0.1473005	0.0125983	0.0173031	0.0040272	0.0004146
Medium Bar	0.7996241	0.0141699	0.0142135	0.0046881	0.0051383
Medium Cra	0.7821410	0.0215246	0.0205287	0.0185397	0.0015020
Medium End	0.8823732	0.0149934	0.0146184	0.0063989	0.0045422
Medium (TOL) Bar	0.2336032	0.0643344	0.0643787	0.0044787	0.0009796
Medium (TOL) Cra	0.2035244	0.0320930	0.0302318	0.0105091	0.0008539
Medium (TOL) End	0.2829829	0.0591412	0.0593907	0.0055033	0.0011885
Medium (MOL) Bar	0.1066913	0.0041202	0.0045556	0.0032805	0.0005628
Medium (MOL) Cra	0.0751767	0.0063807	0.0063584	0.0062001	0.0003079
Medium (MOL) End	0.1241426	0.0114460	0.0150225	0.0037121	0.0004492
Tight Bar	0.5213791	0.0103952	0.0103630	0.0045130	0.0033908
Tight Cra	0.4382337	0.0171544	0.0189165	0.0155903	0.0014192
Tight End	0.6855508	0.0175305	0.0151510	0.0072408	0.0031684
Tight (TOL) Bar	0.1470290	0.0453783	0.0454119	0.0061633	0.0002595
Tight (TOL) Cra	0.0928639	0.0210939	0.0212437	0.0069794	0.0003507
Tight (TOL) End	0.2080975	0.0503626	0.0493159	0.0165766	0.0001995
Tight (MOL) Bar	0.0652951	0.0037412	0.0040452	0.0033555	0.0000848
Tight (MOL) Cra	0.0287233	0.0044643	0.0050157	0.0037670	0.0001110
Tight (MOL) End	0.0890656	0.0095208	0.0113009	0.0031436	0.0003243

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9502507	0.0132980	0.0132874	0.0038697	0.0057626
Loose Cra	0.9082578	0.0177716	0.0184635	0.0169165	0.0022015
Loose End	0.9579394	0.0114107	0.0116725	0.0056183	0.0042156
Loose (TOL) Bar	0.2902823	0.0723495	0.0723974	0.0055758	0.0005765
Loose (TOL) Cra	0.2584043	0.0312115	0.0304845	0.0120100	0.0013705
Loose (TOL) End	0.3394641	0.0685762	0.0692536	0.0103085	0.0000695
Loose (MOL) Bar	0.1401089	0.0052898	0.0056555	0.0040213	0.0004977
Loose (MOL) Cra	0.0967446	0.0071628	0.0077451	0.0071017	0.0004165
Loose (MOL) End	0.1469156	0.0125961	0.0175533	0.0040362	0.0004653
Medium Bar	0.8863272	0.0163793	0.0163406	0.0047388	0.0054331
Medium Cra	0.7524205	0.0201986	0.0189786	0.0187882	0.0008707
Medium End	0.9007318	0.0123890	0.0123831	0.0063470	0.0035192
Medium (TOL) Bar	0.2672496	0.0704944	0.0705722	0.0125259	0.0007502
Medium (TOL) Cra	0.2012073	0.0211443	0.0206315	0.0110318	0.0004443
Medium (TOL) End	0.3148563	0.0662851	0.0664339	0.0148260	0.0017813
Medium (MOL) Bar	0.1264357	0.0046361	0.0050171	0.0040757	0.0005409
Medium (MOL) Cra	0.0784870	0.0071019	0.0076158	0.0063758	0.0002801
Medium (MOL) End	0.1345877	0.0112355	0.0161235	0.0038715	0.0004413
Tight Bar	0.7874915	0.0262071	0.0260371	0.0219423	0.0040434
Tight Cra	0.5808721	0.0299188	0.0311677	0.0171197	0.0009961
Tight End	0.8159703	0.0165154	0.0167230	0.0069299	0.0035792
Tight (TOL) Bar	0.2335226	0.0681613	0.0995924	0.0250026	0.0031652
Tight (TOL) Cra	0.1544953	0.0104713	0.0106298	0.0091522	0.0004658
Tight (TOL) End	0.0907941	0.3506771	0.3225605	0.1661924	0.1944847
Tight (MOL) Bar	0.1089374	0.0045815	0.0051364	0.0041532	0.0005459
Tight (MOL) Cra	0.0598177	0.0065698	0.0071986	0.0055162	0.0002087
Tight (MOL) End	0.1175942	0.0099697	0.0149218	0.0036172	0.0004339

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8335754	0.0123981	0.0125768	0.0048316	0.0047757
Loose Cra	0.8669120	0.0230170	0.0232989	0.0171009	0.0009130
Loose End	0.8723137	0.0099879	0.0100034	0.0065263	0.0039557
Loose (TOL) Bar	0.2603490	0.0647982	0.0648763	0.0065272	0.0001230
Loose (TOL) Cra	0.2390530	0.0354288	0.0340167	0.0115928	0.0010940
Loose (TOL) End	0.3088641	0.0641965	0.0638901	0.0151070	0.0016759
Loose (MOL) Bar	0.1251022	0.0049666	0.0055034	0.0041335	0.0000074
Loose (MOL) Cra	0.0885611	0.0068888	0.0070846	0.0067910	0.0003398
Loose (MOL) End	0.1332639	0.0124972	0.0161975	0.0038466	0.0004242
Medium Bar	0.5597663	0.0090055	0.0091902	0.0055806	0.0034924
Medium Cra	0.6937558	0.0356959	0.0352474	0.0323897	0.0010463
Medium End	0.5928216	0.0122123	0.0094040	0.0079843	0.0020115
Medium (TOL) Bar	0.1848168	0.0439163	0.0439834	0.0071546	0.0001311
Medium (TOL) Cra	0.1906858	0.0378848	0.0371787	0.0284450	0.0005398
Medium (TOL) End	0.1840088	0.0960988	0.0874737	0.0667101	0.0299503
Medium (MOL) Bar	0.0908933	0.0033776	0.0041033	0.0029460	0.0003284
Medium (MOL) Cra	0.0746351	0.0064567	0.0069027	0.0061857	0.0002431
Medium (MOL) End	0.0953296	0.0115435	0.0124441	0.0032552	0.0002730
Tight Bar	0.3250906	0.0055470	0.0059194	0.0038144	0.0021792
Tight Cra	0.4679010	0.0205008	0.0205796	0.0160199	0.0010436
Tight End	0.3598254	0.0968414	0.1297228	0.0061945	0.0014848
Tight (TOL) Bar	0.1131125	0.0258559	0.0259207	0.0062366	0.0006107
Tight (TOL) Cra	0.1267542	0.0176944	0.0175502	0.0082303	0.0003832
Tight (TOL) End	0.1294807	0.1318290	0.1495124	0.0037960	0.0003431
Tight (MOL) Bar	0.0562934	0.0023628	0.0027190	0.0020809	0.0002735
Tight (MOL) Cra	0.0488110	0.0050362	0.0053157	0.0049571	0.0001701
Tight (MOL) End	0.0592933	0.0072985	0.0074909	0.0025628	0.0001687

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0759927	0.0193315	0.0193369	0.0027736	0.0000679
Loose Cra	0.0264148	0.0077898	0.0075209	0.0074501	0.0007669
Loose End	0.5683303	0.0258841	0.0278422	0.0079181	0.0014749
Loose (TOL) Bar	0.0594777	0.0212635	0.0212760	0.0025603	0.0000059
Loose (TOL) Cra	0.0196771	0.0072801	0.0070393	0.0068237	0.0008284
Loose (TOL) End	0.1416226	0.0236313	0.0256418	0.0058684	0.0005813
Loose (MOL) Bar	0.0180771	0.0027831	0.0028452	0.0018990	0.0001190
Loose (MOL) Cra	0.0043079	0.0014428	0.0014834	0.0014403	0.0000160
Loose (MOL) End	0.0850387	0.0042087	0.0102953	0.0030643	0.0002173
Medium Bar	0.0702718	0.0186353	0.0186385	0.0026670	0.0001198
Medium Cra	0.0244043	0.0091259	0.0089271	0.0088188	0.0008699
Medium End	0.5509527	0.0261548	0.0276739	0.0079599	0.0018455
Medium (TOL) Bar	0.0550796	0.0202485	0.0202607	0.0024246	0.0000757
Medium (TOL) Cra	0.0186008	0.0085241	0.0082906	0.0081943	0.0009510
Medium (TOL) End	0.1357087	0.0229721	0.0250187	0.0056852	0.0000380
Medium (MOL) Bar	0.0159306	0.0020963	0.0021595	0.0015779	0.0000487
Medium (MOL) Cra	0.0043062	0.0015778	0.0016150	0.0014385	0.0000144
Medium (MOL) End	0.0803919	0.0037272	0.0097800	0.0029844	0.0002525
Tight Bar	0.0476719	0.0142767	0.0142598	0.0023283	0.0000111
Tight Cra	0.0124366	0.0028197	0.0027302	0.0024556	0.0000379
Tight End	0.4462543	0.0220183	0.0243370	0.0066979	0.0020035
Tight (TOL) Bar	0.0376798	0.0154958	0.0154939	0.0020942	0.0000055
Tight (TOL) Cra	0.0105232	0.0026240	0.0024605	0.0022565	0.0000321
Tight (TOL) End	0.1051314	0.0197455	0.0205354	0.0034155	0.0003840
Tight (MOL) Bar	0.0102113	0.0013982	0.0014255	0.0011472	0.0000875
Tight (MOL) Cra	0.0023922	0.0012102	0.0012252	0.0010712	0.0000078
Tight (MOL) End	0.0609639	0.0042061	0.0076609	0.0025968	0.0002061

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0801678	0.0196335	0.0196244	0.0028609	0.0001444
Loose Cra	0.0254891	0.0171841	0.0166824	0.0162565	0.0031232
Loose End	0.5665992	0.0266874	0.0284030	0.0077093	0.0015948
Loose (TOL) Bar	0.0625601	0.0218556	0.0218580	0.0025665	0.0002487
Loose (TOL) Cra	0.0184352	0.0160654	0.0155588	0.0148300	0.0035009
Loose (TOL) End	0.1409479	0.0234632	0.0254060	0.0055830	0.0003849
Loose (MOL) Bar	0.0188535	0.0022996	0.0023217	0.0015709	0.0003586
Loose (MOL) Cra	0.0047856	0.0015325	0.0015796	0.0015173	0.0000169
Loose (MOL) End	0.0839739	0.0041404	0.0098925	0.0030522	0.0002413
Medium Bar	0.0747837	0.0194522	0.0194464	0.0021452	0.0003368
Medium Cra	0.0243563	0.0042379	0.0037701	0.0034552	0.0000359
Medium End	0.5394763	0.0255975	0.0271630	0.0071625	0.0019109
Medium (TOL) Bar	0.0584937	0.0213618	0.0213648	0.0018633	0.0002569
Medium (TOL) Cra	0.0176698	0.0037451	0.0033018	0.0029327	0.0000255
Medium (TOL) End	0.1338895	0.0230869	0.0251056	0.0038663	0.0003965
Medium (MOL) Bar	0.0166967	0.0012405	0.0012746	0.0010454	0.0000708
Medium (MOL) Cra	0.0043063	0.0014664	0.0015063	0.0014389	0.0000144
Medium (MOL) End	0.0788559	0.0038424	0.0097913	0.0029606	0.0002409
Tight Bar	0.0671863	0.0191064	0.0190934	0.0034247	0.0000099
Tight Cra	0.0215021	0.0053990	0.0050787	0.0032425	0.0000429
Tight End	0.4991223	0.0235827	0.0256567	0.0070055	0.0017356
Tight (TOL) Bar	0.0524781	0.0206943	0.0206903	0.0026642	0.0000142
Tight (TOL) Cra	0.0167232	0.0043714	0.0040367	0.0028523	0.0000327
Tight (TOL) End	0.1216752	0.0330101	0.0343274	0.0036826	0.0003773
Tight (MOL) Bar	0.0137666	0.0018614	0.0018579	0.0017083	0.0000421
Tight (MOL) Cra	0.0038275	0.0016375	0.0017911	0.0013562	0.0000126
Tight (MOL) End	0.0709964	0.0041024	0.0095825	0.0028065	0.0002212

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0693409	0.0161706	0.0161884	0.0031354	0.0004415
Loose Cra	0.0261595	0.0116672	0.0112212	0.0110316	0.0019759
Loose End	0.5133718	0.0229657	0.0253785	0.0076692	0.0013945
Loose (TOL) Bar	0.0539287	0.0181688	0.0181869	0.0028089	0.0005210
Loose (TOL) Cra	0.0192243	0.0108995	0.0104606	0.0100474	0.0022349
Loose (TOL) End	0.1300512	0.0217625	0.0236194	0.0067492	0.0006108
Loose (MOL) Bar	0.0166862	0.0022288	0.0022794	0.0016767	0.0004939
Loose (MOL) Cra	0.0052642	0.0016394	0.0016927	0.0015918	0.0000187
Loose (MOL) End	0.0777534	0.0041178	0.0091606	0.0029358	0.0002273
Medium Bar	0.0448519	0.0089521	0.0089547	0.0021032	0.0001303
Medium Cra	0.0253159	0.0067705	0.0080959	0.0035198	0.0000417
Medium End	0.3399958	0.0185738	0.0193003	0.0060481	0.0009279
Medium (TOL) Bar	0.0346264	0.0102435	0.0102574	0.0018298	0.0001494
Medium (TOL) Cra	0.0186270	0.0057139	0.0074123	0.0030098	0.0000290
Medium (TOL) End	0.0723351	0.0893433	0.0866706	0.0812916	0.0168417
Medium (MOL) Bar	0.0117626	0.0012676	0.0013127	0.0011718	0.0001988
Medium (MOL) Cra	0.0043057	0.0019037	0.0019160	0.0014384	0.0000139
Medium (MOL) End	0.0552506	0.0045624	0.0069623	0.0024725	0.0001548
Tight Bar	0.0261567	0.0047444	0.0047601	0.0011095	0.0001557
Tight Cra	0.0167256	0.0038821	0.0040576	0.0028527	0.0000351
Tight End	0.2072328	0.0226631	0.0226937	0.0048006	0.0005690
Tight (TOL) Bar	0.0200881	0.0052837	0.0053013	0.0010001	0.0000908
Tight (TOL) Cra	0.0114688	0.0029955	0.0032426	0.0023557	0.0000239
Tight (TOL) End	0.0568535	0.0575810	0.0656416	0.0025070	0.0001244
Tight (MOL) Bar	0.0074758	0.0007073	0.0007909	0.0006317	0.0000058
Tight (MOL) Cra	0.0019137	0.0009617	0.0009819	0.0009579	0.0000063
Tight (MOL) End	0.0351434	0.0033141	0.0040077	0.0019676	0.0000825

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0197016	0.0030597	0.0031242	0.0019192	0.0001109
Loose Cra	0.0147920	0.0064518	0.0063678	0.0063439	0.0004679
Loose End	0.0559044	0.0046701	0.0044530	0.0024812	0.0001553
Loose (TOL) Bar	0.0155904	0.0033703	0.0034149	0.0018460	0.0001579
Loose (TOL) Cra	0.0113993	0.0061636	0.0061513	0.0060883	0.0005225
Loose (TOL) End	0.0320966	0.0078699	0.0077829	0.0038583	0.0007866
Loose (MOL) Bar	0.0106475	0.0026238	0.0026748	0.0017479	0.0002055
Loose (MOL) Cra	0.0033505	0.0012707	0.0013625	0.0012693	0.0000124
Loose (MOL) End	0.0167273	0.0046899	0.0048536	0.0033510	0.0012388
Medium Bar	0.0173939	0.0025585	0.0026211	0.0015819	0.0000171
Medium Cra	0.0134229	0.0071341	0.0070807	0.0070620	0.0004064
Medium End	0.0521055	0.0040592	0.0038734	0.0023971	0.0001674
Medium (TOL) Bar	0.0137084	0.0027632	0.0028045	0.0014804	0.0000541
Medium (TOL) Cra	0.0105444	0.0067263	0.0067187	0.0066789	0.0004236
Medium (TOL) End	0.0296986	0.0070599	0.0070144	0.0034081	0.0002447
Medium (MOL) Bar	0.0091147	0.0018366	0.0018892	0.0013470	0.0001219
Medium (MOL) Cra	0.0033492	0.0013367	0.0014238	0.0012680	0.0000111
Medium (MOL) End	0.0147816	0.0037001	0.0038104	0.0026915	0.0008978
Tight Bar	0.0101065	0.0015268	0.0015364	0.0010142	0.0000076
Tight Cra	0.0071762	0.0019402	0.0019277	0.0018602	0.0000231
Tight End	0.0381289	0.0038975	0.0030837	0.0020492	0.0001280
Tight (TOL) Bar	0.0082366	0.0016742	0.0016872	0.0009544	0.0000302
Tight (TOL) Cra	0.0066980	0.0018810	0.0018763	0.0017967	0.0000218
Tight (TOL) End	0.0198611	0.0082606	0.0074761	0.0055426	0.0010448
Tight (MOL) Bar	0.0053903	0.0010889	0.0011173	0.0008506	0.0001055
Tight (MOL) Cra	0.0019138	0.0010585	0.0010770	0.0009579	0.0000063
Tight (MOL) End	0.0082122	0.0053709	0.0045933	0.0039953	0.0020230

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0208292	0.0026780	0.0027071	0.0015777	0.0003226
Loose Cra	0.0142428	0.0090505	0.0089093	0.0086995	0.0014940
Loose End	0.0543856	0.0044719	0.0041687	0.0024506	0.0001609
Loose (TOL) Bar	0.0162440	0.0030569	0.0030707	0.0014371	0.0003819
Loose (TOL) Cra	0.0112600	0.0083559	0.0083018	0.0080018	0.0016155
Loose (TOL) End	0.0311417	0.0076980	0.0075421	0.0036044	0.0008705
Loose (MOL) Bar	0.0107582	0.0020607	0.0020800	0.0012557	0.0004642
Loose (MOL) Cra	0.0033495	0.0013351	0.0014120	0.0012683	0.0000114
Loose (MOL) End	0.0155676	0.0038326	0.0040538	0.0028624	0.0014184
Medium Bar	0.0181533	0.0020357	0.0020783	0.0010213	0.0000958
Medium Cra	0.0119488	0.0027687	0.0024944	0.0024057	0.0000270
Medium End	0.0503754	0.0044073	0.0039411	0.0023607	0.0001794
Medium (TOL) Bar	0.0142817	0.0023568	0.0023768	0.0009284	0.0000574
Medium (TOL) Cra	0.0090813	0.0023719	0.0022844	0.0020940	0.0000208
Medium (TOL) End	0.0292259	0.0066937	0.0065548	0.0024495	0.0000642
Medium (MOL) Bar	0.0093862	0.0009768	0.0010183	0.0007587	0.0000110
Medium (MOL) Cra	0.0028707	0.0011940	0.0013122	0.0011739	0.0000095
Medium (MOL) End	0.0145534	0.0032075	0.0031200	0.0019495	0.0006905
Tight Bar	0.0148673	0.0022049	0.0022307	0.0014433	0.0000036
Tight Cra	0.0105194	0.0032474	0.0030068	0.0022560	0.0000282
Tight End	0.0442570	0.0040348	0.0035076	0.0022109	0.0001586
Tight (TOL) Bar	0.0114919	0.0024083	0.0024232	0.0013826	0.0000539
Tight (TOL) Cra	0.0086071	0.0026975	0.0025519	0.0020386	0.0000234
Tight (TOL) End	0.0133010	0.0293943	0.0258610	0.0189887	0.0117425
Tight (MOL) Bar	0.0074766	0.0013260	0.0013437	0.0011192	0.0000974
Tight (MOL) Cra	0.0023923	0.0012103	0.0012253	0.0010713	0.0000079
Tight (MOL) End	0.0052851	0.0149674	0.0135788	0.0095463	0.0074545

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0192008	0.0026321	0.0026882	0.0018076	0.0004732
Loose Cra	0.0141981	0.0069200	0.0068011	0.0066702	0.0010618
Loose End	0.0517861	0.0044995	0.0043373	0.0023916	0.0001746
Loose (TOL) Bar	0.0151236	0.0028943	0.0029303	0.0016597	0.0005324
Loose (TOL) Cra	0.0112437	0.0064016	0.0063625	0.0061488	0.0011550
Loose (TOL) End	0.0297615	0.0079600	0.0078927	0.0042705	0.0005086
Loose (MOL) Bar	0.0100546	0.0019716	0.0020173	0.0013679	0.0005675
Loose (MOL) Cra	0.0038280	0.0013751	0.0014251	0.0013562	0.0000130
Loose (MOL) End	0.0146007	0.0047981	0.0048756	0.0034503	0.0015142
Medium Bar	0.0141661	0.0016690	0.0017233	0.0011807	0.0001044
Medium Cra	0.0129065	0.0040697	0.0044341	0.0025001	0.0000310
Medium End	0.0382226	0.0032143	0.0028615	0.0020529	0.0001128
Medium (TOL) Bar	0.0111791	0.0019636	0.0020095	0.0010880	0.0001358
Medium (TOL) Cra	0.0100375	0.0037241	0.0043930	0.0022016	0.0000232
Medium (TOL) End	0.0205023	0.0062474	0.0055598	0.0040740	0.0014925
Medium (MOL) Bar	0.0073029	0.0010502	0.0011069	0.0009143	0.0002249
Medium (MOL) Cra	0.0028705	0.0014850	0.0014700	0.0011736	0.0000093
Medium (MOL) End	0.0109287	0.0043495	0.0037215	0.0028978	0.0015931
Tight Bar	0.0094795	0.0010137	0.0011144	0.0006645	0.0000582
Tight Cra	0.0076473	0.0020738	0.0019607	0.0019200	0.0000173
Tight End	0.0201926	0.0159500	0.0158266	0.0014887	0.0000488
Tight (TOL) Bar	0.0072879	0.0013024	0.0013926	0.0005874	0.0000371
Tight (TOL) Cra	0.0052575	0.0016609	0.0017362	0.0015899	0.0000119
Tight (TOL) End	0.0117875	0.0120550	0.0119759	0.0011361	0.0000280
Tight (MOL) Bar	0.0047626	0.0006004	0.0007148	0.0004803	0.0000058
Tight (MOL) Cra	0.0004784	0.0006743	0.0007226	0.0004786	0.0000016
Tight (MOL) End	0.0063310	0.0065507	0.0064109	0.0008321	0.0000157

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0067790	0.0023866	0.0024404	0.0015680	0.0001022
Loose Cra	0.0046013	0.0056717	0.0057418	0.0056301	0.0006442
Loose End	0.0361428	0.0037405	0.0032402	0.0019933	0.0001019
Loose (TOL) Bar	0.0060293	0.0023799	0.0024365	0.0015510	0.0001131
Loose (TOL) Cra	0.0046028	0.0056748	0.0057449	0.0056335	0.0006428
Loose (TOL) End	0.0143200	0.0056044	0.0049912	0.0032847	0.0010328
Loose (MOL) Bar	0.0038004	0.0021526	0.0021925	0.0014973	0.0001252
Loose (MOL) Cra	0.0014358	0.0008302	0.0011983	0.0008297	0.0000052
Loose (MOL) End	0.0092242	0.0046262	0.0042303	0.0030394	0.0011199
Medium Bar	0.0056374	0.0018525	0.0018959	0.0011781	0.0000431
Medium Cra	0.0047493	0.0059310	0.0059768	0.0058984	0.0004963
Medium End	0.0347473	0.0033369	0.0029338	0.0019556	0.0001218
Medium (TOL) Bar	0.0050778	0.0018351	0.0018810	0.0011559	0.0000486
Medium (TOL) Cra	0.0047516	0.0059393	0.0059853	0.0059069	0.0004940
Medium (TOL) End	0.0144597	0.0046225	0.0042644	0.0027368	0.0001309
Medium (MOL) Bar	0.0029991	0.0015220	0.0015514	0.0010734	0.0000951
Medium (MOL) Cra	0.0014354	0.0008955	0.0012441	0.0008293	0.0000048
Medium (MOL) End	0.0089780	0.0036561	0.0033310	0.0023303	0.0007128
Tight Bar	0.0034380	0.0009782	0.0010020	0.0005694	0.0000257
Tight Cra	0.0033489	0.0014179	0.0015003	0.0012681	0.0000108
Tight End	0.0264499	0.0024301	0.0019385	0.0017054	0.0000997
Tight (TOL) Bar	0.0031096	0.0009692	0.0009949	0.0005445	0.0000309
Tight (TOL) Cra	0.0033489	0.0014179	0.0015003	0.0012681	0.0000108
Tight (TOL) End	0.0108175	0.0028764	0.0023707	0.0010886	0.0000379
Tight (MOL) Bar	0.0017486	0.0006856	0.0007031	0.0004378	0.0000526
Tight (MOL) Cra	0.0004784	0.0004916	0.0006860	0.0004786	0.0000016
Tight (MOL) End	0.0055194	0.0044154	0.0036738	0.0034945	0.0010137

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0068399	0.0019185	0.0019433	0.0010804	0.0004108
Loose Cra	0.0034144	0.0062621	0.0062810	0.0058123	0.0018311
Loose End	0.0350653	0.0038165	0.0032382	0.0019651	0.0001132
Loose (TOL) Bar	0.0060509	0.0018982	0.0019258	0.0010377	0.0004147
Loose (TOL) Cra	0.0034171	0.0062649	0.0062837	0.0058168	0.0018285
Loose (TOL) End	0.0141236	0.0051057	0.0042207	0.0027180	0.0007936
Loose (MOL) Bar	0.0035893	0.0015337	0.0015494	0.0008936	0.0004286
Loose (MOL) Cra	0.0009570	0.0007987	0.0011923	0.0006770	0.0000032
Loose (MOL) End	0.0089439	0.0035484	0.0031615	0.0022602	0.0009646
Medium Bar	0.0062059	0.0013239	0.0013618	0.0005957	0.0000174
Medium Cra	0.0038239	0.0014498	0.0014962	0.0013549	0.0000089
Medium End	0.0323455	0.0032318	0.0024968	0.0018881	0.0001156
Medium (TOL) Bar	0.0055083	0.0013094	0.0013502	0.0005603	0.0000125
Medium (TOL) Cra	0.0038239	0.0014498	0.0014962	0.0013549	0.0000089
Medium (TOL) End	0.0129739	0.0039085	0.0033394	0.0018043	0.0003100
Medium (MOL) Bar	0.0031827	0.0005929	0.0006335	0.0004284	0.0000039
Medium (MOL) Cra	0.0009569	0.0007812	0.0011806	0.0006770	0.0000032
Medium (MOL) End	0.0081583	0.0029537	0.0023873	0.0014905	0.0005526
Tight Bar	0.0051083	0.0013338	0.0013591	0.0007623	0.0000181
Tight Cra	0.0033475	0.0014192	0.0014419	0.0012676	0.0000094
Tight End	0.0286382	0.0028337	0.0021682	0.0017759	0.0001103
Tight (TOL) Bar	0.0044500	0.0013160	0.0013435	0.0007164	0.0000297
Tight (TOL) Cra	0.0033475	0.0014192	0.0014419	0.0012676	0.0000094
Tight (TOL) End	0.0106015	0.0053588	0.0118789	0.0048491	0.0006137
Tight (MOL) Bar	0.0024413	0.0007354	0.0007517	0.0005527	0.0000526
Tight (MOL) Cra	0.0004784	0.0004916	0.0006860	0.0004786	0.0000016
Tight (MOL) End	0.0047618	0.0065295	0.0055397	0.0044035	0.0024246

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0068514	0.0020006	0.0020398	0.0013687	0.0005378
Loose Cra	0.0039372	0.0049151	0.0049145	0.0046020	0.0013084
Loose End	0.0335388	0.0035242	0.0032253	0.0019216	0.0001111
Loose (TOL) Bar	0.0059596	0.0019685	0.0020117	0.0013135	0.0005522
Loose (TOL) Cra	0.0039417	0.0049106	0.0049102	0.0045992	0.0013039
Loose (TOL) End	0.0127616	0.0059261	0.0053376	0.0034064	0.0013935
Loose (MOL) Bar	0.0036321	0.0015187	0.0015537	0.0010850	0.0005244
Loose (MOL) Cra	0.0009570	0.0007699	0.0011732	0.0006770	0.0000032
Loose (MOL) End	0.0079645	0.0045618	0.0041323	0.0028287	0.0015085
Medium Bar	0.0051903	0.0012692	0.0013204	0.0007849	0.0001208
Medium Cra	0.0033457	0.0030776	0.0039359	0.0012668	0.0000076
Medium End	0.0262154	0.0029321	0.0024308	0.0016981	0.0000830
Medium (TOL) Bar	0.0045836	0.0012438	0.0012990	0.0007450	0.0001271
Medium (TOL) Cra	0.0033458	0.0030780	0.0039359	0.0012668	0.0000077
Medium (TOL) End	0.0100097	0.0044466	0.0032210	0.0027292	0.0012055
Medium (MOL) Bar	0.0025907	0.0006526	0.0007010	0.0006000	0.0001803
Medium (MOL) Cra	0.0004784	0.0007870	0.0008287	0.0004785	0.0000015
Medium (MOL) End	0.0061378	0.0034425	0.0025821	0.0021914	0.0011575
Tight Bar	0.0031146	0.0007624	0.0008304	0.0003806	0.0000203
Tight Cra	0.0019120	0.0010027	0.0016490	0.0009570	0.0000045
Tight End	0.0144138	0.0099487	0.0097223	0.0012571	0.0000410
Tight (TOL) Bar	0.0026497	0.0007477	0.0008199	0.0003510	0.0000173
Tight (TOL) Cra	0.0019120	0.0010027	0.0016490	0.0009571	0.0000045
Tight (TOL) End	0.0065510	0.0068394	0.0066517	0.0008465	0.0000179
Tight (MOL) Bar	0.0014410	0.0003108	0.0003771	0.0002588	0.0000093
Tight (MOL) Cra	0.0004784	0.0006743	0.0007226	0.0004786	0.0000016
Tight (MOL) End	0.0040400	0.0043636	0.0041017	0.0006646	0.0000113

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0164473	0.0034541	0.0035373	0.0018891	0.0001786
Loose Cra	0.0129170	0.0067304	0.0067824	0.0066111	0.0004355
Loose End	0.0501432	0.0050979	0.0052703	0.0043789	0.0007061
Loose (TOL) Bar	0.0155012	0.0034514	0.0035272	0.0018681	0.0002010
Loose (TOL) Cra	0.0124295	0.0066697	0.0067344	0.0065667	0.0004460
Loose (TOL) End	0.0305496	0.0057660	0.0058579	0.0038575	0.0009181
Loose (MOL) Bar	0.0094023	0.0028516	0.0029343	0.0017564	0.0002038
Loose (MOL) Cra	0.0053631	0.0068424	0.0068734	0.0068168	0.0003593
Loose (MOL) End	0.0165950	0.0043747	0.0045568	0.0034463	0.0011533
Medium Bar	0.0106001	0.0022810	0.0023852	0.0013623	0.0000219
Medium Cra	0.0086120	0.0024300	0.0025258	0.0020384	0.0000283
Medium End	0.0379906	0.0023565	0.0027541	0.0020452	0.0000986
Medium (TOL) Bar	0.0098486	0.0022641	0.0023585	0.0013368	0.0000345
Medium (TOL) Cra	0.0081335	0.0023274	0.0024306	0.0019805	0.0000266
Medium (TOL) End	0.0214546	0.0041469	0.0043784	0.0031144	0.0001046
Medium (MOL) Bar	0.0054957	0.0017013	0.0018222	0.0012071	0.0000001
Medium (MOL) Cra	0.0019138	0.0012413	0.0012571	0.0009578	0.0000063
Medium (MOL) End	0.0121608	0.0028157	0.0032427	0.0026140	0.0002521
Tight Bar	0.0053898	0.0012246	0.0012868	0.0006972	0.0000136
Tight Cra	0.0038275	0.0016896	0.0019476	0.0013561	0.0000125
Tight End	0.0186454	0.0049462	0.0047871	0.0047205	0.0000828
Tight (TOL) Bar	0.0051077	0.0012227	0.0012715	0.0006837	0.0000186
Tight (TOL) Cra	0.0033490	0.0015617	0.0018886	0.0012681	0.0000109
Tight (TOL) End	0.0107917	0.0044163	0.0041821	0.0039237	0.0002057
Tight (MOL) Bar	0.0028028	0.0007673	0.0008467	0.0005518	0.0000144
Tight (MOL) Cra	0.0004784	0.0006767	0.0008288	0.0004786	0.0000016
Tight (MOL) End	0.0056272	0.0039454	0.0038401	0.0038007	0.0002525

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0169466	0.0031904	0.0032406	0.0015496	0.0004643
Loose Cra	0.0119626	0.0027835	0.0028797	0.0024075	0.0000408
Loose End	0.0456404	0.0051583	0.0052636	0.0046553	0.0015069
Loose (TOL) Bar	0.0159882	0.0031665	0.0032115	0.0015406	0.0004991
Loose (TOL) Cra	0.0114840	0.0026973	0.0028502	0.0023583	0.0000391
Loose (TOL) End	0.0277622	0.0055365	0.0055975	0.0038114	0.0016368
Loose (MOL) Bar	0.0094564	0.0024109	0.0024816	0.0013427	0.0004729
Loose (MOL) Cra	0.0043058	0.0014811	0.0015089	0.0014385	0.0000139
Loose (MOL) End	0.0148188	0.0038216	0.0038912	0.0029122	0.0014051
Medium Bar	0.0126512	0.0020520	0.0020922	0.0008154	0.0000433
Medium Cra	0.0062178	0.0019364	0.0019999	0.0017306	0.0000185
Medium End	0.0275266	0.0032635	0.0033312	0.0029106	0.0007835
Medium (TOL) Bar	0.0120898	0.0020839	0.0021161	0.0007984	0.0000360
Medium (TOL) Cra	0.0062178	0.0019364	0.0019999	0.0017306	0.0000185
Medium (TOL) End	0.0173468	0.0034902	0.0034904	0.0022265	0.0007281
Medium (MOL) Bar	0.0070627	0.0010102	0.0010518	0.0006539	0.0000033
Medium (MOL) Cra	0.0023915	0.0011170	0.0012818	0.0010710	0.0000071
Medium (MOL) End	0.0095932	0.0028003	0.0027186	0.0018754	0.0009687
Tight Bar	0.0094902	0.0019565	0.0019893	0.0009285	0.0000227
Tight Cra	0.0043062	0.0016686	0.0016827	0.0014389	0.0000144
Tight End	0.0138503	0.0085196	0.0082284	0.0077997	0.0013936
Tight (TOL) Bar	0.0090136	0.0019417	0.0019670	0.0009122	0.0000080
Tight (TOL) Cra	0.0043062	0.0016686	0.0016827	0.0014389	0.0000144
Tight (TOL) End	0.0096380	0.0083527	0.0079991	0.0076144	0.0011416
Tight (MOL) Bar	0.0052734	0.0011749	0.0011988	0.0008096	0.0000085
Tight (MOL) Cra	0.0004785	0.0005004	0.0004931	0.0004786	0.0000016
Tight (MOL) End	0.0071811	0.0019503	0.0015652	0.0008951	0.0001142

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0154329	0.0028256	0.0029350	0.0016680	0.0005002
Loose Cra	0.0092887	0.0022923	0.0023069	0.0021499	0.0002488
Loose End	0.0352186	0.0067933	0.0068820	0.0061030	0.0012579
Loose (TOL) Bar	0.0144846	0.0028057	0.0029067	0.0016289	0.0005248
Loose (TOL) Cra	0.0087885	0.0022289	0.0022173	0.0020949	0.0002721
Loose (TOL) End	0.0205202	0.0060564	0.0059064	0.0047675	0.0012568
Loose (MOL) Bar	0.0088557	0.0019685	0.0021022	0.0013318	0.0004733
Loose (MOL) Cra	0.0025709	0.0012639	0.0012298	0.0011732	0.0002903
Loose (MOL) End	0.0115786	0.0049184	0.0047488	0.0037422	0.0015965
Medium Bar	0.0105817	0.0017796	0.0018858	0.0010557	0.0000404
Medium Cra	0.0062178	0.0029464	0.0030882	0.0017300	0.0000185
Medium End	0.0192860	0.0059957	0.0057977	0.0050181	0.0023821
Medium (TOL) Bar	0.0098202	0.0017589	0.0018537	0.0010224	0.0000630
Medium (TOL) Cra	0.0062178	0.0029464	0.0030882	0.0017300	0.0000185
Medium (TOL) End	0.0115371	0.0045345	0.0040661	0.0034359	0.0016380
Medium (MOL) Bar	0.0060735	0.0009955	0.0011371	0.0008637	0.0000689
Medium (MOL) Cra	0.0019131	0.0021717	0.0022058	0.0009575	0.0000056
Medium (MOL) End	0.0069497	0.0046687	0.0039631	0.0033648	0.0019789
Tight Bar	0.0064557	0.0011121	0.0012051	0.0005508	0.0000363
Tight Cra	0.0023911	0.0011168	0.0012814	0.0010708	0.0000067
Tight End	0.0123389	0.0051082	0.0051682	0.0011628	0.0000349
Tight (TOL) Bar	0.0057099	0.0011039	0.0011840	0.0005191	0.0000294
Tight (TOL) Cra	0.0023911	0.0011168	0.0012814	0.0010708	0.0000067
Tight (TOL) End	0.0073169	0.0040465	0.0041100	0.0008949	0.0000216
Tight (MOL) Bar	0.0033853	0.0006870	0.0007780	0.0004035	0.0000139
Tight (MOL) Cra	0.0004782	0.0006741	0.0005413	0.0004784	0.0000014
Tight (MOL) End	0.0051333	0.0035304	0.0035987	0.0007493	0.0000157

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0052068	0.0027758	0.0028169	0.0016418	0.0002890
Loose Cra	0.0007061	0.0058592	0.0058391	0.0057719	0.0007246
Loose End	0.0088707	0.0036345	0.0036040	0.0031655	0.0010378
Loose (TOL) Bar	0.0050618	0.0027553	0.0027970	0.0016407	0.0002954
Loose (TOL) Cra	0.0007061	0.0058592	0.0058391	0.0057719	0.0007246
Loose (TOL) End	0.0062248	0.0035494	0.0035352	0.0030232	0.0011793
Loose (MOL) Bar	0.0038855	0.0027458	0.0027931	0.0016400	0.0002709
Loose (MOL) Cra	0.0001949	0.0059748	0.0059477	0.0058986	0.0007589
Loose (MOL) End	0.0034677	0.0034016	0.0033712	0.0029378	0.0012143
Medium Bar	0.0035276	0.0017830	0.0018355	0.0011327	0.0000746
Medium Cra	0.0009569	0.0010557	0.0010419	0.0006769	0.0000031
Medium End	0.0061720	0.0025166	0.0024880	0.0023002	0.0003611
Medium (TOL) Bar	0.0033867	0.0017533	0.0018072	0.0011260	0.0000771
Medium (TOL) Cra	0.0009569	0.0010557	0.0010419	0.0006769	0.0000031
Medium (TOL) End	0.0038173	0.0023998	0.0023899	0.0021074	0.0005381
Medium (MOL) Bar	0.0025278	0.0016961	0.0017582	0.0011255	0.0000585
Medium (MOL) Cra	0.0004784	0.0006831	0.0006778	0.0004785	0.0000016
Medium (MOL) End	0.0025493	0.0022024	0.0021923	0.0020728	0.0003906
Tight Bar	0.0015674	0.0008010	0.0008078	0.0004602	0.0000490
Tight Cra	0.0004784	0.0008340	0.0008296	0.0004785	0.0000016
Tight End	0.0037148	0.0008757	0.0009100	0.0006374	0.0000127
Tight (TOL) Bar	0.0015204	0.0008014	0.0008084	0.0004560	0.0000499
Tight (TOL) Cra	0.0004784	0.0008340	0.0008296	0.0004785	0.0000016
Tight (TOL) End	0.0017886	0.0026083	0.0026191	0.0025441	0.0002802
Tight (MOL) Bar	0.0012001	0.0007320	0.0007567	0.0004442	0.0000469
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0014204	0.0005068	0.0005864	0.0003940	0.0000048

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048246	0.0021701	0.0021837	0.0010973	0.0007173
Loose Cra	0.0014349	0.0017470	0.0017282	0.0008291	0.0000043
Loose End	0.0079725	0.0025553	0.0024671	0.0021855	0.0007383
Loose (TOL) Bar	0.0046630	0.0021598	0.0021740	0.0011098	0.0007404
Loose (TOL) Cra	0.0014349	0.0017470	0.0017282	0.0008291	0.0000043
Loose (TOL) End	0.0056628	0.0022408	0.0022433	0.0018829	0.0008703
Loose (MOL) Bar	0.0032919	0.0021088	0.0021242	0.0010805	0.0007722
Loose (MOL) Cra	0.0004783	0.0006829	0.0006775	0.0004784	0.0000014
Loose (MOL) End	0.0027961	0.0019749	0.0018630	0.0016191	0.0009060
Medium Bar	0.0035898	0.0007863	0.0008141	0.0004831	0.0000586
Medium Cra	0.0004782	0.0006921	0.0006868	0.0004784	0.0000014
Medium End	0.0032350	0.0015891	0.0013284	0.0010471	0.0003582
Medium (TOL) Bar	0.0034480	0.0008024	0.0008303	0.0004760	0.0000619
Medium (TOL) Cra	0.0004782	0.0006921	0.0006868	0.0004784	0.0000014
Medium (TOL) End	0.0024259	0.0012984	0.0010589	0.0008015	0.0002962
Medium (MOL) Bar	0.0025481	0.0007497	0.0007715	0.0004388	0.0000844
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0013897	0.0012181	0.0009354	0.0006812	0.0003525
Tight Bar	0.0024570	0.0009953	0.0010144	0.0005972	0.0000830
Tight Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Tight End	0.0023039	0.0014027	0.0012988	0.0011512	0.0000915
Tight (TOL) Bar	0.0023615	0.0009954	0.0010148	0.0005886	0.0000862
Tight (TOL) Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Tight (TOL) End	0.0017092	0.0013861	0.0012790	0.0011418	0.0001419
Tight (MOL) Bar	0.0016463	0.0009387	0.0009533	0.0005299	0.0001087
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0009804	0.0013009	0.0011338	0.0009864	0.0002173

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048634	0.0020157	0.0020613	0.0012857	0.0006785
Loose Cra	0.0009112	0.0035343	0.0035299	0.0033382	0.0005194
Loose End	0.0049777	0.0031895	0.0030493	0.0026706	0.0006843
Loose (TOL) Bar	0.0046729	0.0019650	0.0020126	0.0012719	0.0006843
Loose (TOL) Cra	0.0009112	0.0035343	0.0035299	0.0033382	0.0005194
Loose (TOL) End	0.0032590	0.0026507	0.0025341	0.0021169	0.0007698
Loose (MOL) Bar	0.0033818	0.0018727	0.0019241	0.0011486	0.0006361
Loose (MOL) Cra	0.0000000	0.0004769	0.0004769	0.0000000	0.0004769
Loose (MOL) End	0.0015857	0.0026070	0.0024644	0.0018796	0.0010276
Medium Bar	0.0032286	0.0008351	0.0009061	0.0006694	0.0001428
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0029186	0.0018379	0.0017398	0.0016236	0.0005657
Medium (TOL) Bar	0.0030845	0.0008301	0.0009023	0.0006579	0.0001483
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0021381	0.0011839	0.0010561	0.0009778	0.0003663
Medium (MOL) Bar	0.0022609	0.0007071	0.0007786	0.0006050	0.0001406
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0011677	0.0012001	0.0009980	0.0008745	0.0004656
Tight Bar	0.0021706	0.0004452	0.0005331	0.0003246	0.0000000
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0017482	0.0006822	0.0004693	0.0004372	0.0000060
Tight (TOL) Bar	0.0020303	0.0004408	0.0005305	0.0003145	0.0000017
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0013111	0.0006301	0.0004308	0.0003786	0.0000045
Tight (MOL) Bar	0.0014735	0.0003781	0.0004577	0.0002677	0.0000044
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0007648	0.0006185	0.0003123	0.0002891	0.0000026

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0028316	0.0023498	0.0024090	0.0015889	0.0002626
Loose Cra	0.0011882	0.0060748	0.0060671	0.0060106	0.0002424
Loose End	0.0011377	0.0028872	0.0028888	0.0025743	0.0010400
Loose (TOL) Bar	0.0028329	0.0023191	0.0023791	0.0015920	0.0002614
Loose (TOL) Cra	0.0011882	0.0060748	0.0060671	0.0060106	0.0002424
Loose (TOL) End	0.0007876	0.0028771	0.0028798	0.0025466	0.0010635
Loose (MOL) Bar	0.0024418	0.0023878	0.0024359	0.0016011	0.0002369
Loose (MOL) Cra	0.0009566	0.0010010	0.0009863	0.0006768	0.0000029
Loose (MOL) End	0.0005125	0.0027501	0.0027500	0.0025458	0.0009030
Medium Bar	0.0017050	0.0014900	0.0015506	0.0010426	0.0000962
Medium Cra	0.0009569	0.0010290	0.0010149	0.0006769	0.0000031
Medium End	0.0010488	0.0017001	0.0016994	0.0014987	0.0004756
Medium (TOL) Bar	0.0017066	0.0014586	0.0015206	0.0010435	0.0000945
Medium (TOL) Cra	0.0009569	0.0010290	0.0010149	0.0006769	0.0000031
Medium (TOL) End	0.0006999	0.0016851	0.0016854	0.0014638	0.0004978
Medium (MOL) Bar	0.0013969	0.0014891	0.0015400	0.0010494	0.0000809
Medium (MOL) Cra	0.0004784	0.0006831	0.0006778	0.0004786	0.0000016
Medium (MOL) End	0.0005524	0.0015259	0.0015271	0.0014590	0.0003187
Tight Bar	0.0006204	0.0006260	0.0006444	0.0003870	0.0000724
Tight Cra	0.0004784	0.0008340	0.0008296	0.0004786	0.0000016
Tight End	0.0007239	0.0003472	0.0003730	0.0002891	0.0000383
Tight (TOL) Bar	0.0006212	0.0006259	0.0006442	0.0003867	0.0000716
Tight (TOL) Cra	0.0004784	0.0008340	0.0008296	0.0004786	0.0000016
Tight (TOL) End	0.0003584	0.0009224	0.0009329	0.0008940	0.0000771
Tight (MOL) Bar	0.0005359	0.0006230	0.0006429	0.0003715	0.0000645
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002185	0.0001870	0.0001710	0.0001545	0.0000008

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0024259	0.0016436	0.0016629	0.0009881	0.0006684
Loose Cra	0.0014355	0.0011335	0.0011044	0.0008294	0.0000049
Loose End	0.0017341	0.0013232	0.0014778	0.0011709	0.0005525
Loose (TOL) Bar	0.0024075	0.0016285	0.0016480	0.0010102	0.0006867
Loose (TOL) Cra	0.0014355	0.0011335	0.0011044	0.0008294	0.0000049
Loose (TOL) End	0.0013857	0.0012913	0.0014607	0.0011262	0.0005743
Loose (MOL) Bar	0.0018298	0.0016404	0.0016543	0.0009872	0.0007102
Loose (MOL) Cra	0.0004785	0.0006831	0.0006778	0.0004786	0.0000016
Loose (MOL) End	0.0009306	0.0011595	0.0012345	0.0010709	0.0003760
Medium Bar	0.0016948	0.0004224	0.0004725	0.0003855	0.0000602
Medium Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Medium End	0.0006850	0.0005791	0.0005112	0.0003868	0.0000772
Medium (TOL) Bar	0.0016951	0.0004223	0.0004724	0.0003853	0.0000598
Medium (TOL) Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Medium (TOL) End	0.0005748	0.0005622	0.0004969	0.0003641	0.0000785
Medium (MOL) Bar	0.0012542	0.0004085	0.0004396	0.0003605	0.0000851
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0004658	0.0005102	0.0004405	0.0003456	0.0000786
Tight Bar	0.0009831	0.0007501	0.0007616	0.0006196	0.0001253
Tight Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Tight End	0.0005463	0.0003892	0.0003539	0.0002444	0.0000019
Tight (TOL) Bar	0.0009832	0.0007501	0.0007616	0.0006196	0.0001252
Tight (TOL) Cra	0.0004785	0.0006924	0.0006871	0.0004786	0.0000016
Tight (TOL) End	0.0004371	0.0003761	0.0003434	0.0002186	0.0000015
Tight (MOL) Bar	0.0005763	0.0007053	0.0007094	0.0005308	0.0001626
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0003278	0.0002947	0.0002568	0.0001893	0.0000012

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0025939	0.0016791	0.0017294	0.0011666	0.0006389
Loose Cra	0.0014356	0.0011396	0.0011107	0.0008295	0.0000050
Loose End	0.0004924	0.0018165	0.0017145	0.0014971	0.0005965
Loose (TOL) Bar	0.0025966	0.0016220	0.0016742	0.0011679	0.0006362
Loose (TOL) Cra	0.0014356	0.0011396	0.0011107	0.0008295	0.0000050
Loose (TOL) End	0.0003834	0.0017741	0.0016769	0.0014503	0.0005965
Loose (MOL) Bar	0.0020244	0.0015579	0.0016094	0.0010737	0.0006080
Loose (MOL) Cra	0.0004785	0.0006832	0.0006779	0.0004786	0.0000016
Loose (MOL) End	0.0000516	0.0016132	0.0015229	0.0013061	0.0006017
Medium Bar	0.0018678	0.0006672	0.0007439	0.0006231	0.0001642
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0005149	0.0005863	0.0005509	0.0004658	0.0001384
Medium (TOL) Bar	0.0018698	0.0006671	0.0007440	0.0006237	0.0001622
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0004113	0.0005345	0.0005030	0.0004188	0.0001331
Medium (MOL) Bar	0.0013821	0.0006135	0.0006776	0.0005740	0.0001881
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0003278	0.0004855	0.0004085	0.0002185	0.0001077
Tight Bar	0.0011871	0.0002580	0.0003670	0.0002465	0.0000136
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0004370	0.0004522	0.0004255	0.0002185	0.0000015
Tight (TOL) Bar	0.0011874	0.0002579	0.0003670	0.0002463	0.0000133
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0003278	0.0004434	0.0004192	0.0001893	0.0000011
Tight (MOL) Bar	0.0009078	0.0002250	0.0003139	0.0002164	0.0000159
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002185	0.0003496	0.0003222	0.0001545	0.0000008