

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8808753	0.0149153	0.0148733	0.0028444	0.0064584
Loose Cra	0.8882070	0.0118978	0.0129664	0.0096280	0.0041458
Loose End	0.9558429	0.0144595	0.0148877	0.0037670	0.0065690
Loose (TOL) Bar	0.2654934	0.0678159	0.0678446	0.0031397	0.0014577
Loose (TOL) Cra	0.2464018	0.0355685	0.0343640	0.0100029	0.0003414
Loose (TOL) End	0.3383940	0.0667173	0.0677481	0.0052045	0.0014127
Loose (MOL) Bar	0.1261248	0.0045924	0.0047988	0.0024949	0.0006543
Loose (MOL) Cra	0.0895201	0.0091786	0.0090886	0.0068292	0.0000792
Loose (MOL) End	0.1419118	0.0117513	0.0153737	0.0027436	0.0006255
Medium Bar	0.7939066	0.0144511	0.0144296	0.0031661	0.0058789
Medium Cra	0.7810047	0.0146439	0.0139350	0.0111487	0.0038773
Medium End	0.8775194	0.0175850	0.0175348	0.0045614	0.0062019
Medium (TOL) Bar	0.2293515	0.0627606	0.0627764	0.0031809	0.0014446
Medium (TOL) Cra	0.2004577	0.0328420	0.0313393	0.0089548	0.0007729
Medium (TOL) End	0.2801518	0.0565727	0.0573989	0.0038002	0.0015211
Medium (MOL) Bar	0.1048604	0.0039256	0.0040754	0.0023800	0.0006210
Medium (MOL) Cra	0.0697597	0.0064015	0.0061582	0.0040465	0.0004215
Medium (MOL) End	0.1187567	0.0099417	0.0132523	0.0025111	0.0006032
Tight Bar	0.5237314	0.0104148	0.0103820	0.0031755	0.0038639
Tight Cra	0.4322458	0.0153817	0.0154564	0.0099453	0.0024844
Tight End	0.6788037	0.0193857	0.0171358	0.0050582	0.0041668
Tight (TOL) Bar	0.1473350	0.0449601	0.0449841	0.0033297	0.0009941
Tight (TOL) Cra	0.0892086	0.0229566	0.0223989	0.0061009	0.0002847
Tight (TOL) End	0.2062767	0.0461502	0.0459487	0.0111509	0.0003120
Tight (MOL) Bar	0.0650629	0.0026982	0.0028411	0.0019235	0.0003556
Tight (MOL) Cra	0.0264979	0.0053290	0.0053263	0.0024673	0.0001584
Tight (MOL) End	0.0862690	0.0079900	0.0097949	0.0021386	0.0004288

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9490845	0.0144255	0.0143678	0.0027524	0.0068952
Loose Cra	0.9085659	0.0108860	0.0112215	0.0098727	0.0040184
Loose End	0.9561612	0.0140038	0.0143755	0.0040020	0.0060575
Loose (TOL) Bar	0.2855832	0.0701141	0.0701330	0.0040156	0.0014208
Loose (TOL) Cra	0.2532404	0.0352668	0.0340794	0.0133487	0.0006992
Loose (TOL) End	0.3389975	0.0664766	0.0673183	0.0072000	0.0007714
Loose (MOL) Bar	0.1384113	0.0052352	0.0054251	0.0031222	0.0006800
Loose (MOL) Cra	0.0924183	0.0089019	0.0088203	0.0075585	0.0003327
Loose (MOL) End	0.1430352	0.0118304	0.0156169	0.0027519	0.0006078
Medium Bar	0.8850820	0.0162631	0.0161346	0.0030238	0.0065407
Medium Cra	0.7594755	0.0141800	0.0131917	0.0112725	0.0030595
Medium End	0.8983878	0.0158765	0.0159396	0.0044943	0.0051824
Medium (TOL) Bar	0.2646962	0.0683365	0.0683410	0.0045818	0.0015621
Medium (TOL) Cra	0.1989148	0.0227888	0.0221291	0.0081769	0.0003198
Medium (TOL) End	0.3145698	0.0642885	0.0646852	0.0082487	0.0004198
Medium (MOL) Bar	0.1255271	0.0041942	0.0043532	0.0025706	0.0008454
Medium (MOL) Cra	0.0738927	0.0042901	0.0042459	0.0041625	0.0002773
Medium (MOL) End	0.1302256	0.0100684	0.0139326	0.0026328	0.0005576
Tight Bar	0.7860838	0.0155638	0.0153323	0.0032434	0.0057416
Tight Cra	0.5785818	0.0311371	0.0317559	0.0201756	0.0009141
Tight End	0.8134890	0.0190948	0.0190975	0.0048761	0.0049828
Tight (TOL) Bar	0.2335347	0.0646532	0.0646572	0.0050675	0.0013230
Tight (TOL) Cra	0.1457293	0.0161846	0.0155780	0.0132273	0.0012765
Tight (TOL) End	0.2322666	0.1229529	0.1073910	0.0643599	0.0510322
Tight (MOL) Bar	0.1071601	0.0033684	0.0034937	0.0015677	0.0007569
Tight (MOL) Cra	0.0549649	0.0042046	0.0043233	0.0035742	0.0002598
Tight (MOL) End	0.1139302	0.0085475	0.0128357	0.0024626	0.0005485

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8397307	0.0119037	0.0119910	0.0031052	0.0060631
Loose Cra	0.8682091	0.0156360	0.0156548	0.0102951	0.0037336
Loose End	0.8751038	0.0115669	0.0116976	0.0045804	0.0056018
Loose (TOL) Bar	0.2581817	0.0631102	0.0631558	0.0045677	0.0010202
Loose (TOL) Cra	0.2354714	0.0377347	0.0356881	0.0092553	0.0004421
Loose (TOL) End	0.3114032	0.0618703	0.0621921	0.0083094	0.0001113
Loose (MOL) Bar	0.1244641	0.0050347	0.0053135	0.0033789	0.0003009
Loose (MOL) Cra	0.0847377	0.0082984	0.0080201	0.0051945	0.0001340
Loose (MOL) End	0.1311719	0.0112864	0.0146956	0.0026391	0.0005703
Medium Bar	0.5719169	0.0071813	0.0075478	0.0032446	0.0042683
Medium Cra	0.6973018	0.0205254	0.0198404	0.0143183	0.0021195
Medium End	0.6049724	0.0110362	0.0071066	0.0050370	0.0034683
Medium (TOL) Bar	0.1850144	0.0426564	0.0427259	0.0050027	0.0011473
Medium (TOL) Cra	0.1857280	0.0315603	0.0301726	0.0123068	0.0008997
Medium (TOL) End	0.2145096	0.0465494	0.0447484	0.0237748	0.0030215
Medium (MOL) Bar	0.0900123	0.0035659	0.0040227	0.0022539	0.0005354
Medium (MOL) Cra	0.0686521	0.0069853	0.0069794	0.0061353	0.0006860
Medium (MOL) End	0.0944641	0.0097368	0.0115780	0.0022397	0.0004289
Tight Bar	0.3389149	0.0045632	0.0051626	0.0027196	0.0025539
Tight Cra	0.4693949	0.0140882	0.0136594	0.0102355	0.0024881
Tight End	0.2051966	0.2406632	0.1687915	0.0050410	0.1671063
Tight (TOL) Bar	0.1150985	0.0253652	0.0254028	0.0016242	0.0008295
Tight (TOL) Cra	0.1262363	0.0184203	0.0177440	0.0054833	0.0006172
Tight (TOL) End	0.0000000	0.1299793	0.1299793	0.0000000	0.1299793
Tight (MOL) Bar	0.0561695	0.0020757	0.0023777	0.0011561	0.0003873
Tight (MOL) Cra	0.0476838	0.0037973	0.0037130	0.0033273	0.0001826
Tight (MOL) End	0.0576386	0.0307688	0.0309129	0.0017458	0.0002735

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0760138	0.0192354	0.0192275	0.0020580	0.0002852
Loose Cra	0.0300902	0.0056214	0.0052476	0.0050143	0.0000764
Loose End	0.5643990	0.0267962	0.0286367	0.0049163	0.0031957
Loose (TOL) Bar	0.0591593	0.0208181	0.0208147	0.0019048	0.0001541
Loose (TOL) Cra	0.0241483	0.0053248	0.0049269	0.0046994	0.0001651
Loose (TOL) End	0.1380240	0.0215157	0.0231900	0.0039570	0.0003165
Loose (MOL) Bar	0.0179830	0.0024266	0.0024405	0.0014621	0.0001152
Loose (MOL) Cra	0.0052103	0.0011946	0.0011232	0.0010882	0.0000325
Loose (MOL) End	0.0802305	0.0033869	0.0081472	0.0020616	0.0003550
Medium Bar	0.0702601	0.0186934	0.0186819	0.0019318	0.0003465
Medium Cra	0.0276841	0.0047350	0.0045851	0.0041557	0.0000061
Medium End	0.5472861	0.0272187	0.0284811	0.0049228	0.0032508
Medium (TOL) Bar	0.0549641	0.0200217	0.0200171	0.0017489	0.0002413
Medium (TOL) Cra	0.0224425	0.0045096	0.0042282	0.0038666	0.0000699
Medium (TOL) End	0.1315919	0.0209498	0.0228371	0.0026412	0.0006272
Medium (MOL) Bar	0.0160424	0.0017464	0.0017440	0.0011577	0.0000499
Medium (MOL) Cra	0.0047564	0.0012875	0.0012907	0.0010393	0.0000288
Medium (MOL) End	0.0756715	0.0029207	0.0079389	0.0020016	0.0003603
Tight Bar	0.0490217	0.0147606	0.0147449	0.0016029	0.0002715
Tight Cra	0.0142638	0.0020332	0.0020102	0.0018037	0.0000810
Tight End	0.4419481	0.0220800	0.0240040	0.0046270	0.0027365
Tight (TOL) Bar	0.0387904	0.0156297	0.0156200	0.0014462	0.0002049
Tight (TOL) Cra	0.0117731	0.0019113	0.0018018	0.0016376	0.0000666
Tight (TOL) End	0.1020245	0.0181644	0.0190866	0.0023262	0.0005203
Tight (MOL) Bar	0.0104692	0.0010240	0.0010162	0.0007985	0.0000336
Tight (MOL) Cra	0.0027174	0.0009474	0.0009393	0.0007850	0.0000159
Tight (MOL) End	0.0576972	0.0034900	0.0063146	0.0017456	0.0002802

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0812219	0.0198049	0.0197952	0.0024073	0.0001067
Loose Cra	0.0302848	0.0067512	0.0063783	0.0061265	0.0005571
Loose End	0.5647518	0.0271049	0.0285559	0.0049521	0.0031336
Loose (TOL) Bar	0.0629495	0.0215731	0.0215663	0.0021465	0.0000449
Loose (TOL) Cra	0.0242564	0.0063667	0.0058684	0.0056680	0.0007324
Loose (TOL) End	0.1375114	0.0218566	0.0234338	0.0054983	0.0002189
Loose (MOL) Bar	0.0192725	0.0024025	0.0024006	0.0013785	0.0003357
Loose (MOL) Cra	0.0054353	0.0014659	0.0014450	0.0011111	0.0000323
Loose (MOL) End	0.0798656	0.0034195	0.0081680	0.0020550	0.0003531
Medium Bar	0.0759761	0.0196414	0.0196245	0.0023340	0.0004504
Medium Cra	0.0251649	0.0047845	0.0043281	0.0039188	0.0004992
Medium End	0.5378118	0.0264379	0.0275400	0.0049488	0.0030089
Medium (TOL) Bar	0.0591550	0.0211589	0.0211488	0.0019954	0.0003076
Medium (TOL) Cra	0.0194307	0.0044569	0.0039541	0.0036028	0.0006053
Medium (TOL) End	0.1297274	0.0211246	0.0228217	0.0038559	0.0004225
Medium (MOL) Bar	0.0173155	0.0016333	0.0016147	0.0011946	0.0000286
Medium (MOL) Cra	0.0042217	0.0016207	0.0016905	0.0012521	0.0000556
Medium (MOL) End	0.0742974	0.0030013	0.0079205	0.0019847	0.0003348
Tight Bar	0.0682761	0.0190944	0.0190794	0.0019901	0.0004584
Tight Cra	0.0207764	0.0045994	0.0042770	0.0033993	0.0001601
Tight End	0.4963654	0.0247470	0.0262085	0.0048461	0.0027969
Tight (TOL) Bar	0.0533128	0.0204183	0.0204101	0.0016409	0.0003479
Tight (TOL) Cra	0.0166395	0.0042336	0.0039073	0.0032507	0.0002448
Tight (TOL) End	0.1175799	0.0210103	0.0222860	0.0078820	0.0000030
Tight (MOL) Bar	0.0145592	0.0013047	0.0012814	0.0010070	0.0000446
Tight (MOL) Cra	0.0033969	0.0012479	0.0012821	0.0008779	0.0000200
Tight (MOL) End	0.0672207	0.0030278	0.0078019	0.0018871	0.0003120

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0715265	0.0165908	0.0165905	0.0026539	0.0002804
Loose Cra	0.0299448	0.0045617	0.0041980	0.0038939	0.0002218
Loose End	0.5141444	0.0243279	0.0260553	0.0048547	0.0027336
Loose (TOL) Bar	0.0553963	0.0182348	0.0182352	0.0024123	0.0004309
Loose (TOL) Cra	0.0239858	0.0043540	0.0038600	0.0035670	0.0003275
Loose (TOL) End	0.1279048	0.0199059	0.0212480	0.0058203	0.0000516
Loose (MOL) Bar	0.0174417	0.0023357	0.0023515	0.0015534	0.0006565
Loose (MOL) Cra	0.0054353	0.0012159	0.0011120	0.0011112	0.0000323
Loose (MOL) End	0.0747040	0.0034394	0.0077039	0.0019880	0.0003264
Medium Bar	0.0466959	0.0093768	0.0093804	0.0017034	0.0000643
Medium Cra	0.0218781	0.0182719	0.0180673	0.0176874	0.0033358
Medium End	0.3477445	0.0185635	0.0188365	0.0073385	0.0012715
Medium (TOL) Bar	0.0359781	0.0104179	0.0104244	0.0014892	0.0000070
Medium (TOL) Cra	0.0163763	0.0169241	0.0166302	0.0160900	0.0036597
Medium (TOL) End	0.0717101	0.0450193	0.0399011	0.0298146	0.0174496
Medium (MOL) Bar	0.0118875	0.0013351	0.0013525	0.0009269	0.0001705
Medium (MOL) Cra	0.0032767	0.0065976	0.0065883	0.0065399	0.0007755
Medium (MOL) End	0.0536072	0.0033335	0.0058688	0.0016822	0.0002359
Tight Bar	0.0272865	0.0047485	0.0047579	0.0008152	0.0001729
Tight Cra	0.0144284	0.0058726	0.0058100	0.0056967	0.0006549
Tight End	0.1172861	0.1800626	0.1491548	0.0036073	0.1000375
Tight (TOL) Bar	0.0208804	0.0053689	0.0053778	0.0007209	0.0001226
Tight (TOL) Cra	0.0103193	0.0051109	0.0050133	0.0049505	0.0007117
Tight (TOL) End	0.0000000	0.0568465	0.0568465	0.0000000	0.0568465
Tight (MOL) Bar	0.0074158	0.0008568	0.0009189	0.0004570	0.0000008
Tight (MOL) Cra	0.0022645	0.0008603	0.0009303	0.0007166	0.0000133
Tight (MOL) End	0.0333954	0.0179630	0.0181170	0.0013252	0.0001485

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0193630	0.0026518	0.0026684	0.0014664	0.0000649
Loose Cra	0.0154739	0.0043047	0.0042834	0.0042177	0.0000596
Loose End	0.0563995	0.0034299	0.0043062	0.0017257	0.0002792
Loose (TOL) Bar	0.0150029	0.0029054	0.0029119	0.0014081	0.0001202
Loose (TOL) Cra	0.0124931	0.0041464	0.0041265	0.0040660	0.0001138
Loose (TOL) End	0.0326369	0.0061975	0.0065244	0.0025548	0.0000643
Loose (MOL) Bar	0.0106033	0.0022992	0.0023181	0.0013568	0.0001925
Loose (MOL) Cra	0.0036244	0.0009865	0.0009744	0.0009071	0.0000224
Loose (MOL) End	0.0183468	0.0037904	0.0040170	0.0022297	0.0004291
Medium Bar	0.0168794	0.0021464	0.0021527	0.0011611	0.0000017
Medium Cra	0.0139562	0.0019251	0.0019300	0.0017895	0.0000015
Medium End	0.0524441	0.0026593	0.0035839	0.0016631	0.0002657
Medium (TOL) Bar	0.0131653	0.0023206	0.0023203	0.0010782	0.0000421
Medium (TOL) Cra	0.0112346	0.0030815	0.0030778	0.0029870	0.0000216
Medium (TOL) End	0.0295429	0.0049113	0.0052756	0.0012452	0.0001342
Medium (MOL) Bar	0.0091915	0.0015868	0.0015927	0.0009975	0.0001168
Medium (MOL) Cra	0.0033973	0.0009571	0.0009528	0.0008781	0.0000205
Medium (MOL) End	0.0162864	0.0029257	0.0032191	0.0017864	0.0002593
Tight Bar	0.0102423	0.0013593	0.0013465	0.0007942	0.0000099
Tight Cra	0.0074725	0.0013772	0.0014510	0.0013034	0.0000434
Tight End	0.0390498	0.0026293	0.0029892	0.0014336	0.0002013
Tight (TOL) Bar	0.0082362	0.0014115	0.0013975	0.0007155	0.0000128
Tight (TOL) Cra	0.0063405	0.0012847	0.0012917	0.0012002	0.0000370
Tight (TOL) End	0.0208458	0.0042006	0.0040964	0.0010451	0.0000990
Tight (MOL) Bar	0.0057153	0.0008600	0.0008588	0.0006268	0.0000770
Tight (MOL) Cra	0.0020380	0.0007557	0.0007637	0.0006797	0.0000119
Tight (MOL) End	0.0106057	0.0042132	0.0036821	0.0031545	0.0006495

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0211080	0.0026817	0.0026885	0.0013687	0.0002582
Loose Cra	0.0154944	0.0041548	0.0041384	0.0039775	0.0004894
Loose End	0.0556629	0.0034685	0.0043898	0.0017130	0.0002687
Loose (TOL) Bar	0.0162126	0.0029982	0.0029909	0.0012326	0.0003079
Loose (TOL) Cra	0.0127172	0.0039418	0.0038839	0.0036808	0.0005651
Loose (TOL) End	0.0320457	0.0066613	0.0068873	0.0030957	0.0000436
Loose (MOL) Bar	0.0112329	0.0022237	0.0022279	0.0011133	0.0004420
Loose (MOL) Cra	0.0037513	0.0013022	0.0012892	0.0009345	0.0000758
Loose (MOL) End	0.0175029	0.0041325	0.0040027	0.0024872	0.0007544
Medium Bar	0.0185603	0.0019286	0.0019306	0.0006503	0.0001240
Medium Cra	0.0115020	0.0022150	0.0021747	0.0019646	0.0002044
Medium End	0.0512494	0.0030563	0.0038892	0.0016452	0.0002639
Medium (TOL) Bar	0.0143489	0.0024065	0.0023914	0.0010589	0.0000597
Medium (TOL) Cra	0.0090066	0.0020954	0.0020388	0.0017578	0.0002235
Medium (TOL) End	0.0290228	0.0051730	0.0054761	0.0012346	0.0001328
Medium (MOL) Bar	0.0098914	0.0014059	0.0014011	0.0009038	0.0000480
Medium (MOL) Cra	0.0026201	0.0012119	0.0012126	0.0010126	0.0000814
Medium (MOL) End	0.0153483	0.0031326	0.0030438	0.0017960	0.0005750
Tight Bar	0.0152535	0.0019710	0.0019765	0.0011426	0.0000852
Tight Cra	0.0092820	0.0019220	0.0019486	0.0014534	0.0000519
Tight End	0.0452060	0.0026890	0.0034470	0.0015446	0.0002371
Tight (TOL) Bar	0.0117639	0.0020821	0.0020775	0.0009425	0.0000440
Tight (TOL) Cra	0.0074711	0.0018471	0.0018548	0.0013033	0.0000420
Tight (TOL) End	0.0251188	0.0045358	0.0047335	0.0011483	0.0001188
Tight (MOL) Bar	0.0080488	0.0011306	0.0011298	0.0007854	0.0000424
Tight (MOL) Cra	0.0020381	0.0008412	0.0008484	0.0006798	0.0000120
Tight (MOL) End	0.0134089	0.0024666	0.0023657	0.0013669	0.0003359

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0196900	0.0025814	0.0025947	0.0015855	0.0005493
Loose Cra	0.0153236	0.0028149	0.0027569	0.0026667	0.0002099
Loose End	0.0530591	0.0036737	0.0045857	0.0016729	0.0002583
Loose (TOL) Bar	0.0151923	0.0028195	0.0028218	0.0014548	0.0006070
Loose (TOL) Cra	0.0125748	0.0026273	0.0025653	0.0024566	0.0002572
Loose (TOL) End	0.0307147	0.0065565	0.0068371	0.0032318	0.0000611
Loose (MOL) Bar	0.0105535	0.0021007	0.0021192	0.0012924	0.0007382
Loose (MOL) Cra	0.0040334	0.0010982	0.0009655	0.0009618	0.0000188
Loose (MOL) End	0.0168430	0.0039665	0.0039898	0.0025227	0.0008956
Medium Bar	0.0142756	0.0016730	0.0016879	0.0010072	0.0000812
Medium Cra	0.0105816	0.0107821	0.0106421	0.0103563	0.0020254
Medium End	0.0391251	0.0025755	0.0036426	0.0014350	0.0001728
Medium (TOL) Bar	0.0110443	0.0019072	0.0019155	0.0008814	0.0000896
Medium (TOL) Cra	0.0078721	0.0100309	0.0098554	0.0094941	0.0022585
Medium (TOL) End	0.0185317	0.0090349	0.0080356	0.0056602	0.0037194
Medium (MOL) Bar	0.0074126	0.0011969	0.0012095	0.0007579	0.0002053
Medium (MOL) Cra	0.0024297	0.0060249	0.0060056	0.0059586	0.0007220
Medium (MOL) End	0.0107068	0.0056551	0.0053414	0.0039496	0.0027268
Tight Bar	0.0091994	0.0009313	0.0009971	0.0005063	0.0000489
Tight Cra	0.0059020	0.0024188	0.0022236	0.0021640	0.0004015
Tight End	0.0097650	0.0358314	0.0357329	0.0331884	0.0126935
Tight (TOL) Bar	0.0069993	0.0011713	0.0012199	0.0004219	0.0000350
Tight (TOL) Cra	0.0040876	0.0021371	0.0019307	0.0018625	0.0004149
Tight (TOL) End	0.0007793	0.0171110	0.0168704	0.0115706	0.0122394
Tight (MOL) Bar	0.0047048	0.0007816	0.0008372	0.0003580	0.0000057
Tight (MOL) Cra	0.0013587	0.0006101	0.0006020	0.0005549	0.0000080
Tight (MOL) End	0.0016706	0.0092254	0.0089208	0.0068148	0.0057464

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0064335	0.0020245	0.0020439	0.0012143	0.0001251
Loose Cra	0.0049382	0.0036616	0.0036852	0.0036350	0.0002397
Loose End	0.0387268	0.0027882	0.0032127	0.0014277	0.0001895
Loose (TOL) Bar	0.0058884	0.0020542	0.0020749	0.0012072	0.0001294
Loose (TOL) Cra	0.0049403	0.0036629	0.0036865	0.0036365	0.0002376
Loose (TOL) End	0.0175038	0.0038126	0.0038474	0.0009571	0.0000764
Loose (MOL) Bar	0.0038827	0.0018901	0.0019050	0.0011839	0.0001517
Loose (MOL) Cra	0.0013590	0.0005892	0.0006445	0.0005550	0.0000083
Loose (MOL) End	0.0120662	0.0036855	0.0036262	0.0020834	0.0003820
Medium Bar	0.0052757	0.0015187	0.0015304	0.0008501	0.0000884
Medium Cra	0.0048649	0.0024291	0.0024898	0.0023390	0.0000878
Medium End	0.0373317	0.0020426	0.0028084	0.0014017	0.0001948
Medium (TOL) Bar	0.0048916	0.0015302	0.0015428	0.0008403	0.0000893
Medium (TOL) Cra	0.0048668	0.0024291	0.0024902	0.0023389	0.0000859
Medium (TOL) End	0.0166763	0.0030965	0.0033346	0.0009343	0.0000788
Medium (MOL) Bar	0.0030956	0.0012987	0.0013056	0.0007913	0.0001274
Medium (MOL) Cra	0.0013589	0.0006408	0.0006991	0.0005550	0.0000082
Medium (MOL) End	0.0115131	0.0027759	0.0027928	0.0015663	0.0001571
Tight Bar	0.0033637	0.0008086	0.0008181	0.0004758	0.0000396
Tight Cra	0.0027173	0.0009403	0.0010937	0.0007850	0.0000158
Tight End	0.0289932	0.0017112	0.0021904	0.0012341	0.0001550
Tight (TOL) Bar	0.0031346	0.0008046	0.0008150	0.0004617	0.0000433
Tight (TOL) Cra	0.0027173	0.0009403	0.0010937	0.0007850	0.0000158
Tight (TOL) End	0.0125105	0.0024347	0.0024366	0.0008089	0.0000624
Tight (MOL) Bar	0.0019856	0.0005746	0.0005844	0.0003928	0.0000653
Tight (MOL) Cra	0.0004529	0.0003376	0.0003840	0.0003203	0.0000026
Tight (MOL) End	0.0081801	0.0017490	0.0016307	0.0006536	0.0000370

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0070889	0.0019651	0.0019863	0.0009481	0.0003487
Loose Cra	0.0039857	0.0027224	0.0027494	0.0025576	0.0007419
Loose End	0.0383637	0.0028440	0.0033396	0.0014204	0.0001894
Loose (TOL) Bar	0.0065351	0.0019927	0.0020154	0.0009266	0.0003391
Loose (TOL) Cra	0.0039890	0.0027216	0.0027487	0.0025573	0.0007386
Loose (TOL) End	0.0173490	0.0038160	0.0038440	0.0009528	0.0000773
Loose (MOL) Bar	0.0042269	0.0017408	0.0017599	0.0008329	0.0003709
Loose (MOL) Cra	0.0007347	0.0018618	0.0019038	0.0018314	0.0001658
Loose (MOL) End	0.0118164	0.0038326	0.0035256	0.0021615	0.0004243
Medium Bar	0.0062223	0.0013628	0.0013797	0.0006885	0.0000208
Medium Cra	0.0032885	0.0013990	0.0014341	0.0011737	0.0003134
Medium End	0.0350859	0.0020210	0.0026525	0.0013590	0.0001793
Medium (TOL) Bar	0.0057252	0.0013980	0.0014161	0.0006640	0.0000220
Medium (TOL) Cra	0.0032888	0.0013990	0.0014342	0.0011737	0.0003132
Medium (TOL) End	0.0151629	0.0028779	0.0030743	0.0008908	0.0000695
Medium (MOL) Bar	0.0036182	0.0009477	0.0009663	0.0005561	0.0000555
Medium (MOL) Cra	0.0007926	0.0006850	0.0007737	0.0006376	0.0001079
Medium (MOL) End	0.0100089	0.0026867	0.0024764	0.0014683	0.0004164
Tight Bar	0.0050359	0.0010922	0.0011059	0.0004893	0.0000099
Tight Cra	0.0029434	0.0009938	0.0010235	0.0008170	0.0000167
Tight End	0.0313932	0.0018294	0.0024392	0.0012853	0.0001691
Tight (TOL) Bar	0.0045784	0.0011289	0.0011435	0.0004668	0.0000031
Tight (TOL) Cra	0.0029434	0.0009938	0.0010235	0.0008170	0.0000168
Tight (TOL) End	0.0134478	0.0025367	0.0026683	0.0008389	0.0000660
Tight (MOL) Bar	0.0027856	0.0006812	0.0006925	0.0003780	0.0000317
Tight (MOL) Cra	0.0006794	0.0004237	0.0004462	0.0003923	0.0000040
Tight (MOL) End	0.0090974	0.0018539	0.0019206	0.0010012	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	0.0066807	0.0019667	0.0019827	0.0011765	0.0006893
Loose Cra	0.0041271	0.0018303	0.0018260	0.0016634	0.0003754
Loose End	0.0365896	0.0028990	0.0035248	0.0013872	0.0001788
Loose (TOL) Bar	0.0060465	0.0019857	0.0020032	0.0011486	0.0006924
Loose (TOL) Cra	0.0041292	0.0018292	0.0018249	0.0016625	0.0003733
Loose (TOL) End	0.0167215	0.0037638	0.0039786	0.0009354	0.0000722
Loose (MOL) Bar	0.0038945	0.0017342	0.0017481	0.0010404	0.0007258
Loose (MOL) Cra	0.0008137	0.0013401	0.0012686	0.0011451	0.0000868
Loose (MOL) End	0.0112368	0.0037032	0.0035748	0.0022862	0.0007964
Medium Bar	0.0050777	0.0011270	0.0011451	0.0006237	0.0001061
Medium Cra	0.0007014	0.0077435	0.0074731	0.0065233	0.0026754
Medium End	0.0286612	0.0021520	0.0029338	0.0012269	0.0001342
Medium (TOL) Bar	0.0046230	0.0011592	0.0011784	0.0006006	0.0001100
Medium (TOL) Cra	0.0007024	0.0077442	0.0074738	0.0065238	0.0026744
Medium (TOL) End	0.0133878	0.0027154	0.0030704	0.0008367	0.0000579
Medium (MOL) Bar	0.0028617	0.0007814	0.0007943	0.0005091	0.0001584
Medium (MOL) Cra	0.0000000	0.0008977	0.0007045	0.0000000	0.0006754
Medium (MOL) End	0.0068138	0.0057348	0.0054509	0.0042458	0.0024185
Tight Bar	0.0029868	0.0006211	0.0006698	0.0002747	0.0000118
Tight Cra	0.0009119	0.0014566	0.0013981	0.0011545	0.0004388
Tight End	0.0170928	0.0171466	0.0187037	0.0009462	0.0000804
Tight (TOL) Bar	0.0026916	0.0006563	0.0007047	0.0002605	0.0000095
Tight (TOL) Cra	0.0009121	0.0014565	0.0013979	0.0011546	0.0004386
Tight (TOL) End	0.0084400	0.0085506	0.0119814	0.0006639	0.0000375
Tight (MOL) Bar	0.0016336	0.0004905	0.0005257	0.0002088	0.0000117
Tight (MOL) Cra	0.0004529	0.0003695	0.0003749	0.0003203	0.0000027
Tight (MOL) End	0.0054699	0.0055433	0.0068877	0.0005343	0.0000238

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0155779	0.0031080	0.0031575	0.0014488	0.0003341
Loose Cra	0.0114295	0.0042637	0.0042723	0.0042081	0.0000518
Loose End	0.0515531	0.0041904	0.0044174	0.0029094	0.0001527
Loose (TOL) Bar	0.0146759	0.0030752	0.0031225	0.0014376	0.0003571
Loose (TOL) Cra	0.0111991	0.0042439	0.0042556	0.0041944	0.0000571
Loose (TOL) End	0.0313976	0.0050866	0.0051947	0.0025740	0.0000858
Loose (MOL) Bar	0.0086689	0.0024963	0.0025497	0.0013750	0.0003464
Loose (MOL) Cra	0.0040213	0.0009708	0.0010344	0.0009617	0.0000309
Loose (MOL) End	0.0162537	0.0036395	0.0036827	0.0022413	0.0003957
Medium Bar	0.0098555	0.0021137	0.0021450	0.0010211	0.0001740
Medium Cra	0.0072472	0.0013618	0.0014122	0.0012837	0.0000432
Medium End	0.0385689	0.0020888	0.0025946	0.0014239	0.0001871
Medium (TOL) Bar	0.0091895	0.0021041	0.0021335	0.0010050	0.0001864
Medium (TOL) Cra	0.0070207	0.0013282	0.0013563	0.0012634	0.0000418
Medium (TOL) End	0.0214694	0.0030527	0.0032906	0.0010605	0.0001001
Medium (MOL) Bar	0.0048460	0.0015620	0.0016008	0.0009109	0.0002026
Medium (MOL) Cra	0.0011324	0.0005451	0.0005526	0.0005066	0.0000068
Medium (MOL) End	0.0114098	0.0016232	0.0019781	0.0007722	0.0000508
Tight Bar	0.0053123	0.0011107	0.0011374	0.0005761	0.0000292
Tight Cra	0.0029438	0.0008715	0.0011730	0.0008171	0.0000172
Tight End	0.0190767	0.0016255	0.0013862	0.0009997	0.0000933
Tight (TOL) Bar	0.0049895	0.0011094	0.0011323	0.0005630	0.0000365
Tight (TOL) Cra	0.0027173	0.0008304	0.0011730	0.0007850	0.0000158
Tight (TOL) End	0.0108400	0.0019594	0.0016281	0.0007527	0.0000516
Tight (MOL) Bar	0.0027507	0.0006670	0.0007116	0.0004621	0.0000440
Tight (MOL) Cra	0.0002264	0.0002540	0.0003403	0.0002265	0.0000013
Tight (MOL) End	0.0055759	0.0010865	0.0008854	0.0005395	0.0000261

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0166407	0.0032847	0.0033107	0.0013141	0.0007363
Loose Cra	0.0111002	0.0018958	0.0019545	0.0015904	0.0000691
Loose End	0.0491963	0.0043462	0.0044889	0.0034695	0.0003888
Loose (TOL) Bar	0.0156480	0.0032266	0.0032506	0.0012856	0.0007374
Loose (TOL) Cra	0.0108736	0.0018605	0.0018771	0.0015740	0.0000677
Loose (TOL) End	0.0294807	0.0050311	0.0049571	0.0028079	0.0007060
Loose (MOL) Bar	0.0091394	0.0025487	0.0025936	0.0011466	0.0007323
Loose (MOL) Cra	0.0038505	0.0010127	0.0010178	0.0009349	0.0000234
Loose (MOL) End	0.0153851	0.0038176	0.0035269	0.0021729	0.0007456
Medium Bar	0.0125110	0.0021586	0.0021766	0.0009009	0.0001104
Medium Cra	0.0060687	0.0013916	0.0014698	0.0011786	0.0000096
Medium End	0.0301601	0.0027597	0.0027316	0.0022375	0.0003897
Medium (TOL) Bar	0.0119093	0.0021729	0.0021894	0.0008824	0.0001261
Medium (TOL) Cra	0.0060687	0.0013916	0.0014698	0.0011786	0.0000096
Medium (TOL) End	0.0183811	0.0032410	0.0030181	0.0017361	0.0004985
Medium (MOL) Bar	0.0070639	0.0014021	0.0014277	0.0007500	0.0001258
Medium (MOL) Cra	0.0022532	0.0008139	0.0009134	0.0007165	0.0000019
Medium (MOL) End	0.0097065	0.0021727	0.0020470	0.0013125	0.0007188
Tight Bar	0.0092868	0.0017300	0.0017498	0.0006379	0.0000215
Tight Cra	0.0045295	0.0012364	0.0013625	0.0010141	0.0000270
Tight End	0.0172494	0.0014310	0.0015067	0.0009505	0.0000813
Tight (TOL) Bar	0.0088695	0.0017253	0.0017425	0.0006262	0.0000332
Tight (TOL) Cra	0.0045295	0.0012364	0.0013625	0.0010141	0.0000270
Tight (TOL) End	0.0110993	0.0017985	0.0017883	0.0007618	0.0000516
Tight (MOL) Bar	0.0052451	0.0009730	0.0009940	0.0005390	0.0000289
Tight (MOL) Cra	0.0011323	0.0005726	0.0005797	0.0005066	0.0000067
Tight (MOL) End	0.0067740	0.0010152	0.0012612	0.0005947	0.0000313

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0147804	0.0029750	0.0029983	0.0014850	0.0008612
Loose Cra	0.0081534	0.0013919	0.0013828	0.0013621	0.0000489
Loose End	0.0386763	0.0046123	0.0047048	0.0035988	0.0006390
Loose (TOL) Bar	0.0138119	0.0029372	0.0029600	0.0014507	0.0008605
Loose (TOL) Cra	0.0079269	0.0014232	0.0013705	0.0013429	0.0000476
Loose (TOL) End	0.0219613	0.0045690	0.0044492	0.0028599	0.0009121
Loose (MOL) Bar	0.0081154	0.0022255	0.0022548	0.0012489	0.0007872
Loose (MOL) Cra	0.0022646	0.0008677	0.0007585	0.0007166	0.0000134
Loose (MOL) End	0.0123134	0.0032401	0.0032989	0.0021138	0.0009647
Medium Bar	0.0099872	0.0017750	0.0018103	0.0008897	0.0002001
Medium Cra	0.0056055	0.0012516	0.0012721	0.0011562	0.0002477
Medium End	0.0207053	0.0073960	0.0073343	0.0063462	0.0026350
Medium (TOL) Bar	0.0092636	0.0017675	0.0018008	0.0008614	0.0002025
Medium (TOL) Cra	0.0056059	0.0012515	0.0012720	0.0011562	0.0002473
Medium (TOL) End	0.0106639	0.0060844	0.0057785	0.0046294	0.0025622
Medium (MOL) Bar	0.0055549	0.0011173	0.0011505	0.0007035	0.0001923
Medium (MOL) Cra	0.0013246	0.0007371	0.0007086	0.0005993	0.0002512
Medium (MOL) End	0.0058977	0.0046159	0.0044363	0.0034126	0.0023492
Tight Bar	0.0060567	0.0010418	0.0011078	0.0003933	0.0000165
Tight Cra	0.0022764	0.0015462	0.0014519	0.0014142	0.0002000
Tight End	0.0097504	0.0158144	0.0155475	0.0148551	0.0045131
Tight (TOL) Bar	0.0054862	0.0010481	0.0011094	0.0003769	0.0000094
Tight (TOL) Cra	0.0022764	0.0015462	0.0014519	0.0014142	0.0002000
Tight (TOL) End	0.0035911	0.0097461	0.0094312	0.0084792	0.0040852
Tight (MOL) Bar	0.0030554	0.0007077	0.0007640	0.0002945	0.0000098
Tight (MOL) Cra	0.0002265	0.0008912	0.0008412	0.0007843	0.0002238
Tight (MOL) End	0.0030836	0.0064576	0.0063482	0.0060547	0.0017401

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0050703	0.0024261	0.0024492	0.0012774	0.0003614
Loose Cra	0.0005986	0.0036668	0.0036426	0.0036207	0.0003019
Loose End	0.0089271	0.0031005	0.0030715	0.0020579	0.0005646
Loose (TOL) Bar	0.0047643	0.0023946	0.0024182	0.0012738	0.0003744
Loose (TOL) Cra	0.0005986	0.0036668	0.0036426	0.0036207	0.0003019
Loose (TOL) End	0.0062528	0.0029732	0.0029418	0.0019831	0.0006974
Loose (MOL) Bar	0.0035545	0.0024322	0.0024562	0.0012909	0.0003446
Loose (MOL) Cra	0.0004242	0.0038252	0.0037878	0.0037768	0.0002511
Loose (MOL) End	0.0041579	0.0029517	0.0028600	0.0019543	0.0005620
Medium Bar	0.0030670	0.0016348	0.0016433	0.0008368	0.0002235
Medium Cra	0.0006794	0.0005545	0.0005418	0.0003923	0.0000040
Medium End	0.0065225	0.0019106	0.0019071	0.0014928	0.0001165
Medium (TOL) Bar	0.0028821	0.0016078	0.0016168	0.0008301	0.0002281
Medium (TOL) Cra	0.0006794	0.0005545	0.0005418	0.0003923	0.0000040
Medium (TOL) End	0.0042543	0.0018341	0.0018218	0.0013835	0.0002582
Medium (MOL) Bar	0.0020086	0.0015858	0.0015942	0.0008232	0.0002226
Medium (MOL) Cra	0.0004529	0.0003969	0.0003890	0.0003203	0.0000027
Medium (MOL) End	0.0030251	0.0018050	0.0017585	0.0013713	0.0000869
Tight Bar	0.0014570	0.0006763	0.0006811	0.0004070	0.0000756
Tight Cra	0.0002264	0.0003946	0.0003926	0.0002265	0.0000013
Tight End	0.0032308	0.0007930	0.0007056	0.0004105	0.0000150
Tight (TOL) Bar	0.0013877	0.0006773	0.0006823	0.0004018	0.0000772
Tight (TOL) Cra	0.0002264	0.0003946	0.0003926	0.0002265	0.0000013
Tight (TOL) End	0.0021364	0.0006619	0.0006536	0.0003338	0.0000099
Tight (MOL) Bar	0.0010290	0.0006424	0.0006529	0.0003869	0.0000754
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0015112	0.0006163	0.0005116	0.0002807	0.0000070

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0051374	0.0024333	0.0024446	0.0009753	0.0008127
Loose Cra	0.0004879	0.0021916	0.0021884	0.0021272	0.0001875
Loose End	0.0076539	0.0024440	0.0024047	0.0017136	0.0006967
Loose (TOL) Bar	0.0048770	0.0023906	0.0024027	0.0009630	0.0008252
Loose (TOL) Cra	0.0004879	0.0021916	0.0021884	0.0021272	0.0001875
Loose (TOL) End	0.0054813	0.0022975	0.0022559	0.0015391	0.0008465
Loose (MOL) Bar	0.0033969	0.0024120	0.0024245	0.0009527	0.0008403
Loose (MOL) Cra	0.0000000	0.0002251	0.0002251	0.0000000	0.0002251
Loose (MOL) End	0.0033507	0.0024291	0.0022263	0.0014353	0.0007468
Medium Bar	0.0037430	0.0012763	0.0012912	0.0005958	0.0001561
Medium Cra	0.0001213	0.0004571	0.0004567	0.0004102	0.0001038
Medium End	0.0028728	0.0015446	0.0014168	0.0009067	0.0006023
Medium (TOL) Bar	0.0035799	0.0012695	0.0012852	0.0005867	0.0001614
Medium (TOL) Cra	0.0001213	0.0004571	0.0004567	0.0004102	0.0001038
Medium (TOL) End	0.0020522	0.0013929	0.0012564	0.0007737	0.0005930
Medium (MOL) Bar	0.0026853	0.0012402	0.0012510	0.0005570	0.0001546
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0011503	0.0013977	0.0012599	0.0006913	0.0006132
Tight Bar	0.0023956	0.0009956	0.0010002	0.0004237	0.0000836
Tight Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Tight End	0.0018898	0.0007350	0.0006727	0.0004813	0.0000812
Tight (TOL) Bar	0.0023026	0.0009805	0.0009854	0.0004174	0.0000865
Tight (TOL) Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Tight (TOL) End	0.0012895	0.0006825	0.0006069	0.0004374	0.0001109
Tight (MOL) Bar	0.0016772	0.0009147	0.0009161	0.0003793	0.0000808
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0008646	0.0006807	0.0005916	0.0003718	0.0001208

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048601	0.0022862	0.0022957	0.0011650	0.0008646
Loose Cra	0.0005772	0.0011841	0.0011164	0.0010836	0.0000982
Loose End	0.0057874	0.0024066	0.0023833	0.0017377	0.0009554
Loose (TOL) Bar	0.0045498	0.0022380	0.0022456	0.0011460	0.0008819
Loose (TOL) Cra	0.0005772	0.0011841	0.0011164	0.0010836	0.0000982
Loose (TOL) End	0.0038799	0.0021383	0.0021105	0.0015058	0.0010474
Loose (MOL) Bar	0.0032701	0.0022079	0.0022130	0.0011118	0.0008319
Loose (MOL) Cra	0.0000914	0.0011466	0.0010393	0.0010197	0.0001337
Loose (MOL) End	0.0024951	0.0021791	0.0021133	0.0014475	0.0010837
Medium Bar	0.0031712	0.0010814	0.0010859	0.0005656	0.0002096
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0015181	0.0033070	0.0031278	0.0022197	0.0019052
Medium (TOL) Bar	0.0029818	0.0010697	0.0010746	0.0005527	0.0002186
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0007872	0.0025251	0.0024132	0.0016175	0.0016505
Medium (MOL) Bar	0.0022291	0.0009793	0.0009816	0.0005226	0.0001825
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0001496	0.0022079	0.0021426	0.0012937	0.0016138
Tight Bar	0.0019411	0.0005661	0.0005989	0.0002380	0.0000197
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0014543	0.0044685	0.0044375	0.0043955	0.0005166
Tight (TOL) Bar	0.0018496	0.0005695	0.0006027	0.0002331	0.0000211
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0009035	0.0032768	0.0032428	0.0031819	0.0005488
Tight (MOL) Bar	0.0013346	0.0005896	0.0006102	0.0001986	0.0000177
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002944	0.0023347	0.0023176	0.0022062	0.0006911

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0027391	0.0021117	0.0021379	0.0012543	0.0003486
Loose Cra	0.0008443	0.0005669	0.0005409	0.0004530	0.0000562
Loose End	0.0020856	0.0023152	0.0023113	0.0017592	0.0006633
Loose (TOL) Bar	0.0025718	0.0020851	0.0021115	0.0012516	0.0003582
Loose (TOL) Cra	0.0008443	0.0005669	0.0005409	0.0004530	0.0000562
Loose (TOL) End	0.0016980	0.0023026	0.0022968	0.0017442	0.0006879
Loose (MOL) Bar	0.0020041	0.0021685	0.0021890	0.0012686	0.0003399
Loose (MOL) Cra	0.0006794	0.0004214	0.0003924	0.0003923	0.0000040
Loose (MOL) End	0.0012747	0.0022714	0.0022515	0.0017566	0.0004888
Medium Bar	0.0014884	0.0013710	0.0013803	0.0007909	0.0002470
Medium Cra	0.0006794	0.0005347	0.0005215	0.0003923	0.0000040
Medium End	0.0018559	0.0013194	0.0013197	0.0011232	0.0002706
Medium (TOL) Bar	0.0014176	0.0013562	0.0013657	0.0007876	0.0002502
Medium (TOL) Cra	0.0006794	0.0005347	0.0005215	0.0003923	0.0000040
Medium (TOL) End	0.0015285	0.0013192	0.0013199	0.0011015	0.0002869
Medium (MOL) Bar	0.0009584	0.0013952	0.0014004	0.0007796	0.0002587
Medium (MOL) Cra	0.0004529	0.0003504	0.0003414	0.0003203	0.0000027
Medium (MOL) End	0.0010812	0.0012838	0.0012759	0.0011115	0.0001636
Tight Bar	0.0006535	0.0005306	0.0005360	0.0003487	0.0000903
Tight Cra	0.0002264	0.0003946	0.0003927	0.0002265	0.0000013
Tight End	0.0008338	0.0005034	0.0004946	0.0002085	0.0000039
Tight (TOL) Bar	0.0006062	0.0005306	0.0005362	0.0003442	0.0000925
Tight (TOL) Cra	0.0002264	0.0003946	0.0003927	0.0002265	0.0000013
Tight (TOL) End	0.0006253	0.0005052	0.0005010	0.0001805	0.0000029
Tight (MOL) Bar	0.0004501	0.0005322	0.0005386	0.0003296	0.0000909
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0004169	0.0004602	0.0004137	0.0001474	0.0000020

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0027014	0.0020500	0.0020623	0.0008800	0.0007019
Loose Cra	0.0006794	0.0005271	0.0005137	0.0003923	0.0000040
Loose End	0.0017492	0.0017115	0.0016913	0.0012801	0.0007404
Loose (TOL) Bar	0.0025485	0.0020154	0.0020274	0.0008697	0.0007195
Loose (TOL) Cra	0.0006794	0.0005271	0.0005137	0.0003923	0.0000040
Loose (TOL) End	0.0014225	0.0016465	0.0016344	0.0012243	0.0007559
Loose (MOL) Bar	0.0018896	0.0020789	0.0020881	0.0008678	0.0007473
Loose (MOL) Cra	0.0002265	0.0003232	0.0003208	0.0002265	0.0000013
Loose (MOL) End	0.0009763	0.0017593	0.0017232	0.0013155	0.0006316
Medium Bar	0.0016926	0.0009203	0.0009336	0.0004931	0.0001556
Medium Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Medium End	0.0005617	0.0010422	0.0010068	0.0006856	0.0004238
Medium (TOL) Bar	0.0016436	0.0009215	0.0009352	0.0004889	0.0001595
Medium (TOL) Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Medium (TOL) End	0.0004229	0.0009492	0.0009174	0.0006299	0.0004070
Medium (MOL) Bar	0.0013051	0.0009378	0.0009431	0.0004717	0.0001598
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0001680	0.0008958	0.0008754	0.0005627	0.0004025
Tight Bar	0.0009649	0.0006785	0.0006802	0.0003543	0.0001169
Tight Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Tight End	0.0003554	0.0010566	0.0010233	0.0009350	0.0001114
Tight (TOL) Bar	0.0009167	0.0006793	0.0006811	0.0003484	0.0001201
Tight (TOL) Cra	0.0002265	0.0003276	0.0003252	0.0002265	0.0000013
Tight (TOL) End	0.0001780	0.0009784	0.0009399	0.0008217	0.0001332
Tight (MOL) Bar	0.0006289	0.0006637	0.0006629	0.0003075	0.0001148
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0000506	0.0009124	0.0008662	0.0007400	0.0001569

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026287	0.0020036	0.0020078	0.0010530	0.0007746
Loose Cra	0.0006795	0.0006067	0.0004869	0.0003924	0.0000041
Loose End	0.0007906	0.0021005	0.0020166	0.0014055	0.0012323
Loose (TOL) Bar	0.0024731	0.0019595	0.0019641	0.0010385	0.0007950
Loose (TOL) Cra	0.0006795	0.0006067	0.0004869	0.0003924	0.0000041
Loose (TOL) End	0.0006436	0.0020418	0.0019642	0.0013575	0.0012236
Loose (MOL) Bar	0.0018813	0.0019777	0.0019820	0.0010205	0.0007782
Loose (MOL) Cra	0.0002265	0.0005438	0.0003702	0.0002265	0.0000014
Loose (MOL) End	0.0002587	0.0019818	0.0019245	0.0012901	0.0012455
Medium Bar	0.0017383	0.0008956	0.0009019	0.0004832	0.0002000
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0008545	0.0008018	0.0000000	0.0007780
Medium (TOL) Bar	0.0016894	0.0008972	0.0009036	0.0004785	0.0002039
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0006413	0.0006240	0.0000000	0.0006224
Medium (MOL) Bar	0.0013489	0.0008749	0.0008772	0.0004587	0.0001837
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0004668	0.0004668	0.0000000	0.0004668
Tight Bar	0.0010520	0.0004981	0.0005280	0.0001940	0.0000299
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0001277	0.0013694	0.0013309	0.0012423	0.0003910
Tight (TOL) Bar	0.0010525	0.0004984	0.0005283	0.0001938	0.0000293
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0000341	0.0009675	0.0009557	0.0008887	0.0003290
Tight (MOL) Bar	0.0008107	0.0005157	0.0005317	0.0001705	0.0000232
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0000000	0.0004858	0.0002850	0.0000000	0.0002593