

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8734458	0.0466027	0.0470471	0.0179200	0.0301197
Loose Cra	0.8377986	0.0903942	0.0908192	0.0826880	0.0340011
Loose End	0.9045492	0.0485912	0.0485676	0.0226055	0.0152728
Loose (TOL) Bar	0.2170281	0.0243306	0.0246565	0.0103544	0.0069624
Loose (TOL) Cra	0.2635011	0.1151414	0.1151151	0.0487571	0.0103365
Loose (TOL) End	0.2996820	0.0299286	0.0299518	0.0210061	0.0058721
Loose (MOL) Bar	0.1167622	0.0193501	0.0190921	0.0140649	0.0029766
Loose (MOL) Cra	0.0787490	0.0519673	0.0514816	0.0244927	0.0027996
Loose (MOL) End	0.1374409	0.0158311	0.0159940	0.0115173	0.0031776
Medium Bar	0.8184467	0.0455180	0.0456868	0.0183750	0.0285123
Medium Cra	0.7211843	0.0945663	0.0934395	0.0789396	0.0249818
Medium End	0.8505550	0.0453931	0.0452202	0.0254823	0.0109735
Medium (TOL) Bar	0.1942519	0.0223337	0.0223979	0.0098330	0.0065057
Medium (TOL) Cra	0.2031153	0.1224482	0.1224309	0.0412414	0.0069128
Medium (TOL) End	0.2588867	0.0450678	0.0449769	0.0401919	0.0016940
Medium (MOL) Bar	0.1036490	0.0135522	0.0131003	0.0070600	0.0034302
Medium (MOL) Cra	0.0456954	0.0578200	0.0575981	0.0179046	0.0013916
Medium (MOL) End	0.1131600	0.0150492	0.0151528	0.0102484	0.0024364
Tight Bar	0.6473266	0.0400452	0.0399324	0.0178425	0.0228190
Tight Cra	0.4950960	0.0886073	0.0881489	0.0639305	0.0140833
Tight End	0.7135053	0.0460723	0.0462124	0.0225554	0.0108026
Tight (TOL) Bar	0.1385220	0.0282973	0.0282307	0.0244747	0.0037299
Tight (TOL) Cra	0.1106311	0.1058586	0.1055653	0.0284301	0.0030362
Tight (TOL) End	0.2175517	0.0211146	0.0224002	0.0142469	0.0039510
Tight (MOL) Bar	0.0715727	0.0181419	0.0179868	0.0167184	0.0011132
Tight (MOL) Cra	0.0130042	0.0448615	0.0448706	0.0092698	0.0003459
Tight (MOL) End	0.0918801	0.0116807	0.0119285	0.0092451	0.0020806

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9374232	0.0496723	0.0498803	0.0182940	0.0328280
Loose Cra	0.8755878	0.0877195	0.0856184	0.0776863	0.0338157
Loose End	0.9311283	0.0427836	0.0428602	0.0219300	0.0130813
Loose (TOL) Bar	0.2363560	0.0262731	0.0264796	0.0108927	0.0079096
Loose (TOL) Cra	0.2828944	0.1168492	0.1164221	0.0489998	0.0107425
Loose (TOL) End	0.3140316	0.0537670	0.0537883	0.0489632	0.0036568
Loose (MOL) Bar	0.1303124	0.0165154	0.0162938	0.0079565	0.0042730
Loose (MOL) Cra	0.0911918	0.0578439	0.0568493	0.0258705	0.0025842
Loose (MOL) End	0.1450723	0.0164715	0.0167290	0.0115925	0.0029625
Medium Bar	0.8926359	0.0502333	0.0502398	0.0189443	0.0318044
Medium Cra	0.7626371	0.0914463	0.0893820	0.0793799	0.0284598
Medium End	0.8763064	0.0482977	0.0482830	0.0294662	0.0096979
Medium (TOL) Bar	0.2201789	0.0250071	0.0248879	0.0105899	0.0074875
Medium (TOL) Cra	0.2165158	0.1161778	0.1160352	0.0426548	0.0076551
Medium (TOL) End	0.2877551	0.0626061	0.0625423	0.0588981	0.0016956
Medium (MOL) Bar	0.1194400	0.0297069	0.0292229	0.0262386	0.0034662
Medium (MOL) Cra	0.0718620	0.0551021	0.0545223	0.0228336	0.0022417
Medium (MOL) End	0.1326179	0.0142965	0.0142610	0.0111801	0.0027138
Tight Bar	0.8190268	0.0471924	0.0470405	0.0190033	0.0295301
Tight Cra	0.5537790	0.0783950	0.0740693	0.0685011	0.0158044
Tight End	0.8095063	0.0508688	0.0509551	0.0268972	0.0117731
Tight (TOL) Bar	0.1939909	0.0224750	0.0223341	0.0099250	0.0066823
Tight (TOL) Cra	0.1499495	0.0817055	0.0812388	0.0339146	0.0043798
Tight (TOL) End	0.2540709	0.0351254	0.0352772	0.0304949	0.0012374
Tight (MOL) Bar	0.1055594	0.0141341	0.0134704	0.0071718	0.0035901
Tight (MOL) Cra	0.0260457	0.0405470	0.0404442	0.0132533	0.0007292
Tight (MOL) End	0.1122138	0.0126431	0.0126804	0.0102974	0.0023620

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9084852	0.0491916	0.0492135	0.0186123	0.0314611
Loose Cra	0.8163852	0.0993947	0.0959470	0.0854148	0.0315750
Loose End	0.9115864	0.0391433	0.0391961	0.0222744	0.0135916
Loose (TOL) Bar	0.2290572	0.0290424	0.0288695	0.0177984	0.0067377
Loose (TOL) Cra	0.2571214	0.1315810	0.1303366	0.0485195	0.0102860
Loose (TOL) End	0.3057371	0.0379878	0.0380405	0.0306364	0.0040806
Loose (MOL) Bar	0.1249509	0.0210566	0.0206789	0.0155839	0.0024126
Loose (MOL) Cra	0.0785765	0.0687474	0.0675900	0.0242379	0.0026272
Loose (MOL) End	0.1388523	0.0166588	0.0167875	0.0114141	0.0028453
Medium Bar	0.7702793	0.0416359	0.0415803	0.0188189	0.0271721
Medium Cra	0.7207271	0.0991758	0.0980889	0.0762932	0.0245246
Medium End	0.7854076	0.0427230	0.0427839	0.0313118	0.0103422
Medium (TOL) Bar	0.1993270	0.0229904	0.0228789	0.0100737	0.0067669
Medium (TOL) Cra	0.2227253	0.1254969	0.1250172	0.0427235	0.0075355
Medium (TOL) End	0.2612477	0.0447529	0.0457160	0.0402804	0.0003042
Medium (MOL) Bar	0.1074538	0.0164824	0.0159426	0.0100166	0.0032963
Medium (MOL) Cra	0.0521487	0.0647805	0.0645222	0.0190960	0.0015158
Medium (MOL) End	0.1175377	0.0135541	0.0139576	0.0105235	0.0024549
Tight Bar	0.5140905	0.0293343	0.0295332	0.0164292	0.0182481
Tight Cra	0.5685472	0.0729011	0.0721420	0.0693529	0.0179143
Tight End	0.4929967	0.1863165	0.1819114	0.1738403	0.0344662
Tight (TOL) Bar	0.1437524	0.0175692	0.0172173	0.0084701	0.0050215
Tight (TOL) Cra	0.1828253	0.0594219	0.0591567	0.0379375	0.0056101
Tight (TOL) End	0.0761071	0.2050237	0.1834936	0.1488532	0.0886705
Tight (MOL) Bar	0.0779483	0.0115855	0.0111627	0.0061198	0.0026748
Tight (MOL) Cra	0.0455770	0.0291135	0.0286736	0.0177448	0.0012732
Tight (MOL) End	0.0693762	0.0100717	0.0099670	0.0080033	0.0013728

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0724580	0.0125510	0.0125261	0.0109222	0.0019985
Loose Cra	0.0592040	0.0297964	0.0298676	0.0207325	0.0022420
Loose End	0.6363104	0.0546996	0.0547116	0.0247072	0.0103296
Loose (TOL) Bar	0.0519841	0.0119847	0.0119512	0.0103069	0.0012182
Loose (TOL) Cra	0.0526276	0.0269160	0.0269602	0.0194509	0.0019947
Loose (TOL) End	0.1364745	0.0193104	0.0193195	0.0157025	0.0013394
Loose (MOL) Bar	0.0172663	0.0095937	0.0095892	0.0086498	0.0002391
Loose (MOL) Cra	0.0197900	0.0145600	0.0146314	0.0116648	0.0008026
Loose (MOL) End	0.0775978	0.0105207	0.0110925	0.0085421	0.0017477
Medium Bar	0.0676499	0.0076810	0.0076609	0.0056650	0.0020044
Medium Cra	0.0459433	0.0237799	0.0238792	0.0179948	0.0016395
Medium End	0.6217079	0.0591361	0.0591417	0.0351061	0.0079328
Medium (TOL) Bar	0.0485044	0.0141243	0.0141035	0.0131201	0.0012396
Medium (TOL) Cra	0.0459499	0.0237842	0.0238835	0.0179972	0.0016461
Medium (TOL) End	0.1290188	0.0337786	0.0337529	0.0322496	0.0008853
Medium (MOL) Bar	0.0162950	0.0106027	0.0106007	0.0102574	0.0003352
Medium (MOL) Cra	0.0131374	0.0109993	0.0110364	0.0093905	0.0004792
Medium (MOL) End	0.0729856	0.0097957	0.0102138	0.0081870	0.0014948
Tight Bar	0.0488516	0.0148887	0.0148902	0.0142876	0.0007115
Tight Cra	0.0196039	0.0126655	0.0122808	0.0114524	0.0006166
Tight End	0.5325023	0.0544832	0.0556327	0.0212274	0.0085268
Tight (TOL) Bar	0.0333316	0.0130628	0.0130904	0.0126043	0.0000712
Tight (TOL) Cra	0.0196055	0.0126667	0.0122820	0.0114534	0.0006182
Tight (TOL) End	0.1144527	0.0138059	0.0175793	0.0102737	0.0019854
Tight (MOL) Bar	0.0088095	0.0083585	0.0083612	0.0082009	0.0012562
Tight (MOL) Cra	0.0065395	0.0071536	0.0071684	0.0065658	0.0002103
Tight (MOL) End	0.0632521	0.0090059	0.0093649	0.0076237	0.0013515

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0772497	0.0091953	0.0092009	0.0060605	0.0024138
Loose Cra	0.0459700	0.0223978	0.0224955	0.0179156	0.0016662
Loose End	0.6387710	0.1130135	0.1127642	0.1068026	0.0002874
Loose (TOL) Bar	0.0548769	0.0083179	0.0083132	0.0050859	0.0014852
Loose (TOL) Cra	0.0394040	0.0197145	0.0199119	0.0165197	0.0014293
Loose (TOL) End	0.1158284	0.1190337	0.1175013	0.1133938	0.0227941
Loose (MOL) Bar	0.0182404	0.0139684	0.0139728	0.0130112	0.0001403
Loose (MOL) Cra	0.0065667	0.0066904	0.0067049	0.0065970	0.0002376
Loose (MOL) End	0.0782720	0.0102442	0.0110820	0.0084571	0.0015501
Medium Bar	0.0751086	0.0090028	0.0089334	0.0059928	0.0024609
Medium Cra	0.0393396	0.0208941	0.0210891	0.0165493	0.0013649
Medium End	0.5199143	0.5637339	0.5537999	0.5433265	0.0921171
Medium (TOL) Bar	0.0527215	0.0081045	0.0079787	0.0049944	0.0015180
Medium (TOL) Cra	0.0327834	0.0181041	0.0184150	0.0150367	0.0011378
Medium (TOL) End	0.0391159	0.2655966	0.2480614	0.2148564	0.0934037
Medium (MOL) Bar	0.0165174	0.0119460	0.0118822	0.0106901	0.0005504
Medium (MOL) Cra	0.0065619	0.0071891	0.0072041	0.0065968	0.0002328
Medium (MOL) End	0.0747452	0.0105039	0.0108561	0.0083054	0.0015107
Tight Bar	0.0656957	0.0081446	0.0080762	0.0055902	0.0022384
Tight Cra	0.0327193	0.0180316	0.0183425	0.0149587	0.0010738
Tight End	0.5851217	0.1458861	0.1455628	0.1389956	0.0036047
Tight (TOL) Bar	0.0462134	0.0074980	0.0074444	0.0046574	0.0015745
Tight (TOL) Cra	0.0327229	0.0180341	0.0183450	0.0149603	0.0010773
Tight (TOL) End	0.1020976	0.0995878	0.0980067	0.0958277	0.0164725
Tight (MOL) Bar	0.0154163	0.0079605	0.0079093	0.0067880	0.0000990
Tight (MOL) Cra	0.0065484	0.0071694	0.0071843	0.0065787	0.0002193
Tight (MOL) End	0.0658885	0.0102051	0.0105046	0.0078057	0.0013724

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0773446	0.0133541	0.0131599	0.0111003	0.0011958
Loose Cra	0.0394965	0.0190407	0.0182167	0.0167158	0.0015218
Loose End	0.6389365	0.0540703	0.0542505	0.0338055	0.0077246
Loose (TOL) Bar	0.0544610	0.0128508	0.0127514	0.0103227	0.0001940
Loose (TOL) Cra	0.0329149	0.0172162	0.0160921	0.0151742	0.0012694
Loose (TOL) End	0.1365935	0.0331748	0.0331694	0.0315231	0.0020290
Loose (MOL) Bar	0.0186503	0.0110669	0.0109816	0.0082662	0.0014810
Loose (MOL) Cra	0.0065834	0.0090348	0.0076189	0.0066248	0.0002543
Loose (MOL) End	0.0782708	0.0099820	0.0105061	0.0084922	0.0015489
Medium Bar	0.0624455	0.0086338	0.0085728	0.0054506	0.0020516
Medium Cra	0.0393091	0.0187448	0.0189607	0.0164810	0.0013345
Medium End	0.5450637	0.0859829	0.0864271	0.0781310	0.0027795
Medium (TOL) Bar	0.0456484	0.0083205	0.0082648	0.0056824	0.0014471
Medium (TOL) Cra	0.0327576	0.0162659	0.0166074	0.0149823	0.0011121
Medium (TOL) End	0.1152411	0.0613259	0.0646286	0.0603292	0.0059446
Medium (MOL) Bar	0.0151217	0.0058610	0.0058202	0.0034123	0.0002420
Medium (MOL) Cra	0.0065527	0.0067132	0.0067282	0.0065836	0.0002236
Medium (MOL) End	0.0685254	0.0091436	0.0094380	0.0079556	0.0013937
Tight Bar	0.0425933	0.0069365	0.0069194	0.0044685	0.0014554
Tight Cra	0.0327194	0.0180229	0.0183340	0.0149587	0.0010738
Tight End	0.3735817	0.1816416	0.1813914	0.1786824	0.0030530
Tight (TOL) Bar	0.0308120	0.0064534	0.0064260	0.0037836	0.0010527
Tight (TOL) Cra	0.0261750	0.0153133	0.0157644	0.0133231	0.0008586
Tight (TOL) End	0.0314775	0.1187893	0.1082882	0.0964373	0.0461162
Tight (MOL) Bar	0.0099665	0.0058054	0.0057948	0.0021338	0.0003385
Tight (MOL) Cra	0.0065482	0.0071692	0.0071841	0.0065786	0.0002191
Tight (MOL) End	0.0373574	0.0063001	0.0063676	0.0058272	0.0007401

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0213746	0.0092076	0.0092159	0.0085757	0.0000696
Loose Cra	0.0197420	0.0144918	0.0145555	0.0116064	0.0007547
Loose End	0.0729841	0.0091833	0.0096254	0.0082706	0.0014932
Loose (TOL) Bar	0.0168606	0.0093684	0.0093636	0.0086851	0.0002072
Loose (TOL) Cra	0.0197442	0.0144937	0.0145574	0.0116077	0.0007569
Loose (TOL) End	0.0362811	0.0076370	0.0075711	0.0057744	0.0005357
Loose (MOL) Bar	0.0090714	0.0091376	0.0091511	0.0081318	0.0005566
Loose (MOL) Cra	0.0131671	0.0110636	0.0111008	0.0094251	0.0005088
Loose (MOL) End	0.0186819	0.0047270	0.0048386	0.0041091	0.0003732
Medium Bar	0.0181500	0.0105215	0.0105304	0.0103263	0.0002307
Medium Cra	0.0196996	0.0143928	0.0144564	0.0115571	0.0007123
Medium End	0.0719445	0.0090304	0.0095102	0.0081227	0.0013255
Medium (TOL) Bar	0.0145936	0.0102562	0.0102552	0.0100383	0.0002861
Medium (TOL) Cra	0.0197016	0.0143944	0.0144580	0.0115582	0.0007142
Medium (TOL) End	0.0346575	0.0187791	0.0187599	0.0179797	0.0002161
Medium (MOL) Bar	0.0081330	0.0095088	0.0095218	0.0091648	0.0006197
Medium (MOL) Cra	0.0131383	0.0110000	0.0110370	0.0093911	0.0004800
Medium (MOL) End	0.0186569	0.0047005	0.0049901	0.0040907	0.0003483
Tight Bar	0.0107492	0.0087026	0.0087046	0.0085078	0.0010670
Tight Cra	0.0130767	0.0109106	0.0109493	0.0093204	0.0004184
Tight End	0.0595461	0.0083997	0.0089113	0.0073855	0.0011329
Tight (TOL) Bar	0.0085025	0.0083558	0.0083591	0.0081291	0.0011255
Tight (TOL) Cra	0.0130775	0.0109114	0.0109501	0.0093210	0.0004193
Tight (TOL) End	0.0293174	0.0070336	0.0070358	0.0051443	0.0005467
Tight (MOL) Bar	0.0042712	0.0071995	0.0072040	0.0070107	0.0014180
Tight (MOL) Cra	0.0065397	0.0071539	0.0071687	0.0065661	0.0002106
Tight (MOL) End	0.0133398	0.0042056	0.0042833	0.0034574	0.0002622

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0224334	0.0131394	0.0131529	0.0124250	0.0001139
Loose Cra	0.0131257	0.0124121	0.0124435	0.0093677	0.0004675
Loose End	0.0736715	0.0093880	0.0475119	0.0081966	0.0013088
Loose (TOL) Bar	0.0177272	0.0052635	0.0052858	0.0028782	0.0002217
Loose (TOL) Cra	0.0131270	0.0123856	0.0124170	0.0093686	0.0004688
Loose (TOL) End	0.0040878	0.0858206	0.0800806	0.0636196	0.0316576
Loose (MOL) Bar	0.0093256	0.0129833	0.0130149	0.0117624	0.0007400
Loose (MOL) Cra	0.0065601	0.0085382	0.0085496	0.0065903	0.0002309
Loose (MOL) End	0.0072310	0.0631494	0.0625354	0.0594459	0.0110776
Medium Bar	0.0207873	0.0120502	0.0120326	0.0113211	0.0002192
Medium Cra	0.0131198	0.0109749	0.0110142	0.0093749	0.0004615
Medium End	0.0499031	0.1130786	0.1120452	0.1092171	0.0163567
Medium (TOL) Bar	0.0158810	0.0116090	0.0115520	0.0106961	0.0003116
Medium (TOL) Cra	0.0131211	0.0109762	0.0110155	0.0093758	0.0004629
Medium (TOL) End	0.0084599	0.0615486	0.0570313	0.0457139	0.0229263
Medium (MOL) Bar	0.0082436	0.0103509	0.0102601	0.0087708	0.0009468
Medium (MOL) Cra	0.0065623	0.0071895	0.0072045	0.0065973	0.0002332
Medium (MOL) End	0.0046808	0.0379882	0.0367315	0.0330766	0.0101404
Tight Bar	0.0177819	0.0077220	0.0077117	0.0069221	0.0002765
Tight Cra	0.0130936	0.0109430	0.0109819	0.0093435	0.0004353
Tight End	0.0613477	0.0081874	0.0086573	0.0075226	0.0011908
Tight (TOL) Bar	0.0132627	0.0044352	0.0043443	0.0024940	0.0001336
Tight (TOL) Cra	0.0130947	0.0109441	0.0109830	0.0093444	0.0004365
Tight (TOL) End	0.0277585	0.0095480	0.0095063	0.0084166	0.0001404
Tight (MOL) Bar	0.0072643	0.0066067	0.0065318	0.0051586	0.0001755
Tight (MOL) Cra	0.0065487	0.0071698	0.0071847	0.0065791	0.0002196
Tight (MOL) End	0.0116986	0.0065205	0.0064908	0.0062555	0.0005072

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0235503	0.0099359	0.0098825	0.0078023	0.0009574
Loose Cra	0.0131729	0.0107427	0.0099729	0.0094327	0.0005147
Loose End	0.0702127	0.0209580	0.0210763	0.0200314	0.0004655
Loose (TOL) Bar	0.0180939	0.0102754	0.0101959	0.0078345	0.0011621
Loose (TOL) Cra	0.0131743	0.0107294	0.0099584	0.0094337	0.0005161
Loose (TOL) End	0.0320512	0.0186621	0.0186564	0.0161837	0.0028224
Loose (MOL) Bar	0.0098647	0.0106579	0.0105776	0.0073686	0.0019515
Loose (MOL) Cra	0.0065838	0.0082191	0.0066311	0.0066252	0.0002547
Loose (MOL) End	0.0164440	0.0146350	0.0146823	0.0134142	0.0018646
Medium Bar	0.0187889	0.0054244	0.0054110	0.0036644	0.0004081
Medium Cra	0.0131089	0.0109506	0.0109874	0.0093560	0.0004507
Medium End	0.0606335	0.0099303	0.0125359	0.0075589	0.0003952
Medium (TOL) Bar	0.0147294	0.0053390	0.0053001	0.0033796	0.0002874
Medium (TOL) Cra	0.0131100	0.0109516	0.0109885	0.0093568	0.0004518
Medium (TOL) End	0.0236195	0.0277590	0.0279734	0.0242445	0.0051512
Medium (MOL) Bar	0.0083499	0.0052318	0.0052138	0.0026459	0.0000348
Medium (MOL) Cra	0.0065532	0.0071732	0.0071872	0.0065841	0.0002241
Medium (MOL) End	0.0088384	0.0182656	0.0182390	0.0159947	0.0042392
Tight Bar	0.0131379	0.0052232	0.0052162	0.0024531	0.0004465
Tight Cra	0.0065458	0.0071652	0.0071800	0.0065761	0.0002167
Tight End	0.0463653	0.0073525	0.0075838	0.0065545	0.0001578
Tight (TOL) Bar	0.0095136	0.0052038	0.0051414	0.0020844	0.0003232
Tight (TOL) Cra	0.0065464	0.0071658	0.0071807	0.0065767	0.0002173
Tight (TOL) End	0.0186272	0.0186523	0.0181353	0.0170474	0.0031687
Tight (MOL) Bar	0.0054363	0.0051583	0.0051454	0.0015729	0.0001846
Tight (MOL) Cra	0.0065486	0.0071696	0.0071845	0.0065789	0.0002195
Tight (MOL) End	0.0052536	0.0115019	0.0112493	0.0107265	0.0025930

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0061934	0.0073535	0.0073458	0.0070769	0.0003711
Loose Cra	0.0131560	0.0110510	0.0110881	0.0094155	0.0004977
Loose End	0.0622830	0.0082988	0.0095265	0.0076085	0.0012543
Loose (TOL) Bar	0.0062198	0.0074196	0.0074121	0.0071471	0.0003447
Loose (TOL) Cra	0.0131560	0.0110511	0.0110881	0.0094155	0.0004978
Loose (TOL) End	0.0265596	0.0062539	0.0065724	0.0049191	0.0004045
Loose (MOL) Bar	0.0025495	0.0072102	0.0072276	0.0067554	0.0005139
Loose (MOL) Cra	0.0131581	0.0110530	0.0110901	0.0094171	0.0004999
Loose (MOL) End	0.0160208	0.0041898	0.0043672	0.0037997	0.0003277
Medium Bar	0.0054507	0.0075810	0.0075807	0.0074849	0.0002385
Medium Cra	0.0131352	0.0109958	0.0110328	0.0093873	0.0004769
Medium End	0.0621786	0.0082001	0.0094507	0.0075344	0.0011499
Medium (TOL) Bar	0.0054836	0.0076432	0.0076430	0.0075499	0.0002057
Medium (TOL) Cra	0.0131352	0.0109958	0.0110328	0.0093873	0.0004770
Medium (TOL) End	0.0266338	0.0061616	0.0066945	0.0048938	0.0004786
Medium (MOL) Bar	0.0022629	0.0071385	0.0071495	0.0069550	0.0003629
Medium (MOL) Cra	0.0131372	0.0109975	0.0110346	0.0093889	0.0004790
Medium (MOL) End	0.0159941	0.0040510	0.0043594	0.0037849	0.0003010
Tight Bar	0.0024154	0.0052054	0.0052283	0.0048800	0.0006481
Tight Cra	0.0065396	0.0071539	0.0071687	0.0065660	0.0002105
Tight End	0.0515394	0.0073132	0.0086104	0.0068582	0.0009727
Tight (TOL) Bar	0.0024151	0.0052083	0.0052316	0.0048819	0.0006484
Tight (TOL) Cra	0.0065396	0.0071539	0.0071687	0.0065660	0.0002105
Tight (TOL) End	0.0222069	0.0055149	0.0058382	0.0044686	0.0004109
Tight (MOL) Bar	0.0006034	0.0043969	0.0044382	0.0042968	0.0007095
Tight (MOL) Cra	0.0065400	0.0071543	0.0071690	0.0065664	0.0002109
Tight (MOL) End	0.0115598	0.0034789	0.0036020	0.0032167	0.0002259

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0075553	0.0034775	0.0035407	0.0018710	0.0001155
Loose Cra	0.0065599	0.0071842	0.0071978	0.0065902	0.0002308
Loose End	0.0000000	0.1093141	0.0887140	0.0000000	0.0619006
Loose (TOL) Bar	0.0076938	0.0034619	0.0035082	0.0018711	0.0002540
Loose (TOL) Cra	0.0065599	0.0071842	0.0071978	0.0065902	0.0002308
Loose (TOL) End	0.0000000	0.0463373	0.0389053	0.0000000	0.0261552
Loose (MOL) Bar	0.0035572	0.0102012	0.0102456	0.0094874	0.0003815
Loose (MOL) Cra	0.0065559	0.0071787	0.0071922	0.0065856	0.0002268
Loose (MOL) End	0.0000000	0.0291809	0.0236823	0.0000000	0.0156931
Medium Bar	0.0064227	0.0034895	0.0033467	0.0017584	0.0001418
Medium Cra	0.0065583	0.0071847	0.0071997	0.0065932	0.0002292
Medium End	0.0386628	0.1146548	0.1133437	0.1103950	0.0180067
Medium (TOL) Bar	0.0064873	0.0034457	0.0033039	0.0017585	0.0000773
Medium (TOL) Cra	0.0065583	0.0071847	0.0071997	0.0065932	0.0002292
Medium (TOL) End	0.0018903	0.0504381	0.0466490	0.0361133	0.0207775
Medium (MOL) Bar	0.0026374	0.0063967	0.0063715	0.0053101	0.0004261
Medium (MOL) Cra	0.0065592	0.0071856	0.0072006	0.0065941	0.0002301
Medium (MOL) End	0.0057753	0.0430083	0.0424857	0.0410235	0.0073023
Tight Bar	0.0049838	0.0030748	0.0029555	0.0015058	0.0001698
Tight Cra	0.0065483	0.0071694	0.0071843	0.0065787	0.0002192
Tight End	0.0524658	0.0074292	0.0086633	0.0069407	0.0010273
Tight (TOL) Bar	0.0049838	0.0030775	0.0029583	0.0015058	0.0001698
Tight (TOL) Cra	0.0065483	0.0071694	0.0071843	0.0065787	0.0002192
Tight (TOL) End	0.0201975	0.0054621	0.0057391	0.0042903	0.0001452
Tight (MOL) Bar	0.0018123	0.0031648	0.0031354	0.0009068	0.0000617
Tight (MOL) Cra	0.0065491	0.0071702	0.0071851	0.0065795	0.0002200
Tight (MOL) End	0.0105952	0.0032073	0.0033549	0.0030910	0.0001331

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0074382	0.0079794	0.0079042	0.0059724	0.0013145
Loose Cra	0.0065835	0.0082842	0.0067118	0.0066250	0.0002544
Loose End	0.0595364	0.0240130	0.0243445	0.0237149	0.0002513
Loose (TOL) Bar	0.0075620	0.0080224	0.0079447	0.0060598	0.0011908
Loose (TOL) Cra	0.0065836	0.0082842	0.0067118	0.0066251	0.0002544
Loose (TOL) End	0.0213965	0.0199117	0.0199161	0.0182195	0.0038869
Loose (MOL) Bar	0.0034738	0.0084710	0.0084129	0.0058470	0.0017778
Loose (MOL) Cra	0.0065793	0.0082788	0.0067070	0.0066201	0.0002502
Loose (MOL) End	0.0142674	0.0167163	0.0167387	0.0161363	0.0014257
Medium Bar	0.0057647	0.0037759	0.0037450	0.0022029	0.0000754
Medium Cra	0.0065518	0.0071711	0.0071852	0.0065822	0.0002226
Medium End	0.0533063	0.0077681	0.0085056	0.0069859	0.0009959
Medium (TOL) Bar	0.0057813	0.0034738	0.0034425	0.0016373	0.0000920
Medium (TOL) Cra	0.0065518	0.0071712	0.0071852	0.0065822	0.0002227
Medium (TOL) End	0.0213185	0.0063609	0.0062493	0.0043797	0.0003944
Medium (MOL) Bar	0.0025909	0.0038497	0.0038386	0.0016461	0.0000349
Medium (MOL) Cra	0.0065491	0.0071678	0.0071818	0.0065795	0.0002200
Medium (MOL) End	0.0115518	0.0047861	0.0046250	0.0032154	0.0002179
Tight Bar	0.0040784	0.0038504	0.0038287	0.0013618	0.0001396
Tight Cra	0.0065483	0.0071694	0.0071842	0.0065787	0.0002192
Tight End	0.0408711	0.0063377	0.0068281	0.0060980	0.0007665
Tight (TOL) Bar	0.0040784	0.0038505	0.0038287	0.0013618	0.0001396
Tight (TOL) Cra	0.0065483	0.0071694	0.0071842	0.0065787	0.0002192
Tight (TOL) End	0.0159910	0.0043342	0.0043789	0.0037876	0.0002979
Tight (MOL) Bar	0.0022658	0.0039819	0.0039796	0.0010143	0.0000776
Tight (MOL) Cra	0.0065491	0.0071702	0.0071850	0.0065795	0.0002200
Tight (MOL) End	0.0071110	0.0027604	0.0027897	0.0025197	0.0001363

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0177089	0.0105488	0.0106719	0.0096576	0.0006718
Loose Cra	0.0460881	0.0271834	0.0273892	0.0181168	0.0017843
Loose End	0.0746284	0.0131105	0.0140414	0.0121163	0.0005221
Loose (TOL) Bar	0.0167797	0.0105233	0.0106518	0.0097416	0.0007258
Loose (TOL) Cra	0.0460881	0.0271834	0.0273892	0.0181168	0.0017843
Loose (TOL) End	0.0425846	0.0068085	0.0069416	0.0062559	0.0007363
Loose (MOL) Bar	0.0086864	0.0105330	0.0106665	0.0095213	0.0009416
Loose (MOL) Cra	0.0197920	0.0145618	0.0146333	0.0116659	0.0008046
Loose (MOL) End	0.0258257	0.0059275	0.0059305	0.0048430	0.0005423
Medium Bar	0.0125939	0.0111703	0.0111958	0.0108095	0.0005352
Medium Cra	0.0262726	0.0176420	0.0177342	0.0134160	0.0009562
Medium End	0.0556078	0.0246714	0.0248512	0.0244379	0.0019336
Medium (TOL) Bar	0.0116671	0.0109620	0.0109921	0.0106555	0.0005867
Medium (TOL) Cra	0.0262726	0.0176420	0.0177342	0.0134160	0.0009562
Medium (TOL) End	0.0269900	0.0052597	0.0055818	0.0049742	0.0000370
Medium (MOL) Bar	0.0045005	0.0101806	0.0102157	0.0097458	0.0007511
Medium (MOL) Cra	0.0065686	0.0071987	0.0072129	0.0066046	0.0002395
Medium (MOL) End	0.0151114	0.0050811	0.0051343	0.0036787	0.0002902
Tight Bar	0.0062317	0.0076936	0.0077208	0.0075324	0.0012082
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0328734	0.0059262	0.0073895	0.0054504	0.0006153
Tight (TOL) Bar	0.0057623	0.0075632	0.0075935	0.0074051	0.0012399
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0168775	0.0040324	0.0057591	0.0038895	0.0003125
Tight (MOL) Bar	0.0010649	0.0062098	0.0062301	0.0060097	0.0015609
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0088924	0.0029678	0.0032048	0.0028192	0.0001740

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0199853	0.0146693	0.0147425	0.0137645	0.0005836
Loose Cra	0.0460145	0.0246231	0.0248170	0.0179311	0.0017107
Loose End	0.0818636	0.0455963	0.0456610	0.0449611	0.0061922
Loose (TOL) Bar	0.0185870	0.0144053	0.0144885	0.0135550	0.0006690
Loose (TOL) Cra	0.0460145	0.0246214	0.0248154	0.0179311	0.0017107
Loose (TOL) End	0.0482888	0.0396020	0.0396160	0.0394592	0.0022779
Loose (MOL) Bar	0.0104729	0.0144165	0.0145525	0.0134303	0.0004680
Loose (MOL) Cra	0.0197063	0.0126005	0.0126700	0.0115317	0.0007189
Loose (MOL) End	0.0301879	0.0063324	0.0063344	0.0052099	0.0005453
Medium Bar	0.0145896	0.0135623	0.0134609	0.0118251	0.0016030
Medium Cra	0.0196858	0.0143794	0.0144469	0.0115436	0.0006985
Medium End	0.0514046	0.0412123	0.0423138	0.0392208	0.0113678
Medium (TOL) Bar	0.0136592	0.0132617	0.0131552	0.0115970	0.0016581
Medium (TOL) Cra	0.0196858	0.0143794	0.0144469	0.0115436	0.0006985
Medium (TOL) End	0.0275062	0.0327826	0.0337798	0.0315831	0.0073674
Medium (MOL) Bar	0.0062090	0.0122494	0.0121659	0.0100563	0.0021061
Medium (MOL) Cra	0.0131267	0.0109844	0.0110237	0.0093798	0.0004685
Medium (MOL) End	0.0185146	0.0311896	0.0315921	0.0309841	0.0015377
Tight Bar	0.0114901	0.0046380	0.0045594	0.0023202	0.0001115
Tight Cra	0.0131040	0.0109542	0.0109932	0.0093510	0.0004458
Tight End	0.0436813	0.0110119	0.0117772	0.0098327	0.0000894
Tight (TOL) Bar	0.0110393	0.0043510	0.0042683	0.0022748	0.0000984
Tight (TOL) Cra	0.0131040	0.0109542	0.0109932	0.0093510	0.0004458
Tight (TOL) End	0.0201501	0.0078589	0.0079544	0.0074368	0.0007740
Tight (MOL) Bar	0.0056971	0.0039450	0.0039190	0.0016369	0.0000078
Tight (MOL) Cra	0.0065525	0.0071743	0.0071892	0.0065828	0.0002233
Tight (MOL) End	0.0132207	0.0040008	0.0041234	0.0034582	0.0001431

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0182454	0.0114037	0.0113430	0.0085460	0.0018859
Loose Cra	0.0197639	0.0122282	0.0118211	0.0116255	0.0007765
Loose End	0.0806430	0.0208509	0.0217726	0.0204361	0.0004381
Loose (TOL) Bar	0.0168638	0.0111151	0.0110609	0.0084027	0.0019546
Loose (TOL) Cra	0.0197639	0.0122280	0.0118209	0.0116255	0.0007765
Loose (TOL) End	0.0439665	0.0071858	0.0075694	0.0063462	0.0003745
Loose (MOL) Bar	0.0080527	0.0117135	0.0116431	0.0081621	0.0024506
Loose (MOL) Cra	0.0065842	0.0091972	0.0078105	0.0066256	0.0002551
Loose (MOL) End	0.0248737	0.0063863	0.0063573	0.0047320	0.0004621
Medium Bar	0.0143264	0.0063363	0.0063229	0.0042299	0.0001156
Medium Cra	0.0131112	0.0096290	0.0096709	0.0093577	0.0004530
Medium End	0.0442652	0.0637741	0.0635283	0.0616764	0.0115326
Medium (TOL) Bar	0.0134131	0.0060687	0.0060580	0.0041192	0.0001537
Medium (TOL) Cra	0.0131112	0.0096290	0.0096709	0.0093577	0.0004530
Medium (TOL) End	0.0256791	0.0522985	0.0531977	0.0520835	0.0030916
Medium (MOL) Bar	0.0062111	0.0056919	0.0056790	0.0031677	0.0003534
Medium (MOL) Cra	0.0000000	0.0038107	0.0038107	0.0000000	0.0000000
Medium (MOL) End	0.0168886	0.0046835	0.0092321	0.0038952	0.0003236
Tight Bar	0.0099675	0.0044565	0.0044573	0.0021340	0.0003395
Tight Cra	0.0130961	0.0109465	0.0109854	0.0093454	0.0004379
Tight End	0.0394785	0.0268629	0.0270706	0.0263752	0.0006261
Tight (TOL) Bar	0.0095144	0.0044849	0.0044876	0.0020845	0.0003240
Tight (TOL) Cra	0.0130961	0.0109465	0.0109854	0.0093454	0.0004379
Tight (TOL) End	0.0153410	0.0175947	0.0173726	0.0169742	0.0020958
Tight (MOL) Bar	0.0049836	0.0044661	0.0044697	0.0015058	0.0001696
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0106684	0.0034336	0.0033588	0.0030902	0.0002063

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0064252	0.0089731	0.0090099	0.0080011	0.0005770
Loose Cra	0.0065827	0.0072270	0.0072428	0.0066226	0.0002536
Loose End	0.0143646	0.0089720	0.0089554	0.0072424	0.0004566
Loose (TOL) Bar	0.0064158	0.0089090	0.0089447	0.0081262	0.0005864
Loose (TOL) Cra	0.0065827	0.0072270	0.0072428	0.0066226	0.0002536
Loose (TOL) End	0.0078682	0.0075743	0.0074507	0.0067874	0.0008502
Loose (MOL) Bar	0.0052568	0.0093381	0.0093831	0.0086249	0.0004324
Loose (MOL) Cra	0.0065964	0.0072503	0.0072663	0.0066433	0.0002673
Loose (MOL) End	0.0057912	0.0078019	0.0076040	0.0062886	0.0003117
Medium Bar	0.0042356	0.0028310	0.0028441	0.0014334	0.0001408
Medium Cra	0.0065686	0.0071986	0.0072128	0.0066046	0.0002395
Medium End	0.0096284	0.0157784	0.0159660	0.0150823	0.0008336
Medium (TOL) Bar	0.0042458	0.0024936	0.0025086	0.0014334	0.0001305
Medium (TOL) Cra	0.0065686	0.0071986	0.0072128	0.0066046	0.0002395
Medium (TOL) End	0.0045528	0.0143736	0.0144722	0.0139293	0.0015501
Medium (MOL) Bar	0.0031684	0.0023467	0.0023644	0.0011989	0.0001049
Medium (MOL) Cra	0.0065691	0.0071992	0.0072134	0.0066051	0.0002400
Medium (MOL) End	0.0044418	0.0042502	0.0042406	0.0019886	0.0000826
Tight Bar	0.0015773	0.0061274	0.0061893	0.0058879	0.0006109
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0053303	0.0041991	0.0062633	0.0021794	0.0000992
Tight (TOL) Bar	0.0015842	0.0061328	0.0061951	0.0058924	0.0006040
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0026650	0.0030895	0.0040748	0.0015398	0.0000495
Tight (MOL) Bar	0.0006671	0.0056752	0.0057143	0.0055985	0.0006458
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0017777	0.0017359	0.0017318	0.0012577	0.0000340

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0081451	0.0043392	0.0045582	0.0019251	0.0002676
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0101052	0.0258510	0.0258274	0.0243765	0.0064597
Loose (TOL) Bar	0.0081451	0.0039873	0.0042109	0.0019251	0.0002676
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0016250	0.0221133	0.0219620	0.0200006	0.0079652
Loose (MOL) Bar	0.0067866	0.0044721	0.0046400	0.0017563	0.0002221
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0000000	0.0090725	0.0088774	0.0000000	0.0061029
Medium Bar	0.0067935	0.0047477	0.0046749	0.0017588	0.0002290
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0008449	0.0139041	0.0139260	0.0119783	0.0070017
Medium (TOL) Bar	0.0067935	0.0043887	0.0043098	0.0017588	0.0002290
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0043592	0.0043592	0.0000000	0.0043592
Medium (MOL) Bar	0.0054344	0.0041502	0.0041341	0.0015721	0.0001828
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0026155	0.0026155	0.0000000	0.0026155
Tight Bar	0.0045309	0.0041793	0.0040913	0.0014355	0.0001545
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0054035	0.0034881	0.0036221	0.0032909	0.0006994
Tight (TOL) Bar	0.0045309	0.0038246	0.0037283	0.0014355	0.0001545
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0018037	0.0026915	0.0026873	0.0023501	0.0008118
Tight (MOL) Bar	0.0031716	0.0035747	0.0035502	0.0012003	0.0001082
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0009200	0.0022782	0.0022760	0.0020915	0.0008237

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0073177	0.0109110	0.0108076	0.0077713	0.0014350
Loose Cra	0.0000000	0.0068797	0.0038162	0.0000000	0.0000000
Loose End	0.0130907	0.0129855	0.0140748	0.0122785	0.0034743
Loose (TOL) Bar	0.0073599	0.0106372	0.0105311	0.0077969	0.0013928
Loose (TOL) Cra	0.0000000	0.0068797	0.0038162	0.0000000	0.0000000
Loose (TOL) End	0.0048534	0.0123095	0.0128214	0.0113565	0.0047368
Loose (MOL) Bar	0.0068570	0.0118535	0.0118298	0.0095853	0.0005829
Loose (MOL) Cra	0.0000000	0.0068754	0.0038146	0.0000000	0.0000000
Loose (MOL) End	0.0004545	0.0121993	0.0122077	0.0107036	0.0047766
Medium Bar	0.0054367	0.0051186	0.0051033	0.0015730	0.0001850
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0035134	0.0144338	0.0139520	0.0127177	0.0043332
Medium (TOL) Bar	0.0054367	0.0047449	0.0047284	0.0015730	0.0001850
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0038838	0.0026155	0.0000000	0.0026155
Medium (MOL) Bar	0.0040774	0.0046420	0.0046356	0.0013614	0.0001387
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0025892	0.0017437	0.0000000	0.0017437
Tight Bar	0.0045320	0.0038167	0.0037952	0.0014359	0.0001556
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0035715	0.0099971	0.0098086	0.0096031	0.0016595
Tight (TOL) Bar	0.0045320	0.0038167	0.0037952	0.0014359	0.0001556
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0000000	0.0012952	0.0008718	0.0000000	0.0008718
Tight (MOL) Bar	0.0031723	0.0039062	0.0039017	0.0012006	0.0001088
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0000000	0.0012952	0.0008718	0.0000000	0.0008718

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0027680	0.0079232	0.0079463	0.0072737	0.0007331
Loose Cra	0.0065830	0.0072246	0.0072404	0.0066228	0.0002538
Loose End	0.0062333	0.0031170	0.0030955	0.0023623	0.0001304
Loose (TOL) Bar	0.0027557	0.0080131	0.0080348	0.0073802	0.0007454
Loose (TOL) Cra	0.0065830	0.0072246	0.0072404	0.0066228	0.0002538
Loose (TOL) End	0.0044521	0.0030608	0.0030574	0.0019949	0.0000929
Loose (MOL) Bar	0.0019122	0.0082812	0.0083097	0.0075406	0.0007137
Loose (MOL) Cra	0.0065964	0.0072477	0.0072636	0.0066433	0.0002673
Loose (MOL) End	0.0044523	0.0030607	0.0030484	0.0019949	0.0000931
Medium Bar	0.0024502	0.0023847	0.0024269	0.0011098	0.0001756
Medium Cra	0.0065689	0.0071974	0.0072115	0.0066048	0.0002397
Medium End	0.0044410	0.0030622	0.0032344	0.0019883	0.0000818
Medium (TOL) Bar	0.0024576	0.0023856	0.0024280	0.0011098	0.0001682
Medium (TOL) Cra	0.0065689	0.0071974	0.0072115	0.0066048	0.0002397
Medium (TOL) End	0.0035528	0.0030475	0.0034197	0.0017780	0.0000654
Medium (MOL) Bar	0.0018108	0.0025468	0.0026313	0.0009060	0.0000603
Medium (MOL) Cra	0.0065691	0.0071977	0.0072119	0.0066051	0.0002400
Medium (MOL) End	0.0035529	0.0030475	0.0030407	0.0017780	0.0000655
Tight Bar	0.0007635	0.0044837	0.0045482	0.0043835	0.0005494
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0017778	0.0017361	0.0017320	0.0012578	0.0000342
Tight (TOL) Bar	0.0007635	0.0044837	0.0045482	0.0043835	0.0005494
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0008889	0.0016039	0.0016028	0.0008891	0.0000171
Tight (MOL) Bar	0.0002720	0.0043131	0.0043217	0.0042620	0.0006033
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0008889	0.0016039	0.0016028	0.0008892	0.0000171

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0045257	0.0034354	0.0035407	0.0014334	0.0001494
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0023073	0.0350921	0.0350269	0.0345244	0.0037955
Loose (TOL) Bar	0.0045257	0.0034354	0.0035407	0.0014334	0.0001494
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0004630	0.0237075	0.0236651	0.0232478	0.0030243
Loose (MOL) Bar	0.0036200	0.0039937	0.0040619	0.0012815	0.0001189
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0003604	0.0250372	0.0249911	0.0243232	0.0031270
Medium Bar	0.0036235	0.0033659	0.0033507	0.0012829	0.0001224
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0035534	0.0027522	0.0038444	0.0017786	0.0000661
Medium (TOL) Bar	0.0036235	0.0033659	0.0033507	0.0012829	0.0001224
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0017766	0.0021836	0.0028117	0.0012569	0.0000330
Medium (MOL) Bar	0.0027174	0.0033879	0.0034031	0.0011106	0.0000916
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0017767	0.0021837	0.0028117	0.0012570	0.0000330
Tight Bar	0.0018123	0.0025007	0.0024632	0.0009068	0.0000618
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0026681	0.0016274	0.0016175	0.0015419	0.0000526
Tight (TOL) Bar	0.0018123	0.0025007	0.0024632	0.0009068	0.0000618
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0008893	0.0009064	0.0009044	0.0008896	0.0000175
Tight (MOL) Bar	0.0009062	0.0025495	0.0025489	0.0006410	0.0000309
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0008893	0.0009064	0.0009044	0.0008896	0.0000175

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0049999	0.0096197	0.0095165	0.0066743	0.0011270
Loose Cra	0.0000000	0.0068775	0.0038186	0.0000000	0.0000000
Loose End	0.0048581	0.0151288	0.0153953	0.0144327	0.0021166
Loose (TOL) Bar	0.0050000	0.0096195	0.0095163	0.0066740	0.0011269
Loose (TOL) Cra	0.0000000	0.0068775	0.0038186	0.0000000	0.0000000
Loose (TOL) End	0.0027804	0.0142590	0.0145276	0.0132704	0.0024507
Loose (MOL) Bar	0.0051196	0.0071970	0.0071577	0.0015696	0.0001321
Loose (MOL) Cra	0.0000000	0.0068777	0.0038187	0.0000000	0.0000000
Loose (MOL) End	0.0029537	0.0187251	0.0189567	0.0183030	0.0014055
Medium Bar	0.0031716	0.0040583	0.0040368	0.0012004	0.0001082
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0035526	0.0025932	0.0043897	0.0017784	0.0000653
Medium (TOL) Bar	0.0031716	0.0040583	0.0040368	0.0012004	0.0001082
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0026612	0.0018487	0.0000000	0.0017437
Medium (MOL) Bar	0.0022654	0.0042378	0.0042356	0.0010141	0.0000772
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0012947	0.0008718	0.0000000	0.0008718
Tight Bar	0.0031724	0.0035663	0.0035417	0.0012007	0.0001089
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0014708	0.0047313	0.0045189	0.0043098	0.0011447
Tight (TOL) Bar	0.0031724	0.0035663	0.0035417	0.0012007	0.0001089
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0000000	0.0012952	0.0008718	0.0000000	0.0008718
Tight (MOL) Bar	0.0022659	0.0036153	0.0036128	0.0010143	0.0000777
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0000000	0.0012952	0.0008718	0.0000000	0.0008718