

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8764824	0.0142058	0.0140759	0.0039495	0.0057128
Loose Cra	0.8855194	0.0144282	0.0153082	0.0118705	0.0049482
Loose End	0.9523925	0.0163061	0.0169815	0.0054081	0.0073398
Loose (TOL) Bar	0.2615142	0.0670224	0.0670431	0.0033622	0.0015169
Loose (TOL) Cra	0.2396195	0.0373398	0.0363547	0.0131314	0.0005363
Loose (TOL) End	0.3363629	0.0667692	0.0682627	0.0071687	0.0017675
Loose (MOL) Bar	0.1239312	0.0047403	0.0048258	0.0023614	0.0006652
Loose (MOL) Cra	0.0830407	0.0147352	0.0141439	0.0086903	0.0009057
Loose (MOL) End	0.1376526	0.0109410	0.0137694	0.0038020	0.0006425
Medium Bar	0.7883980	0.0144123	0.0143264	0.0044688	0.0051528
Medium Cra	0.7803880	0.0172201	0.0168389	0.0141423	0.0053988
Medium End	0.8734969	0.0193022	0.0192076	0.0064161	0.0063118
Medium (TOL) Bar	0.2264152	0.0625386	0.0625394	0.0031814	0.0013463
Medium (TOL) Cra	0.1964262	0.0324728	0.0312848	0.0099901	0.0008398
Medium (TOL) End	0.2770415	0.0562325	0.0575392	0.0071474	0.0013841
Medium (MOL) Bar	0.1033315	0.0040826	0.0039961	0.0021707	0.0005797
Medium (MOL) Cra	0.0643431	0.0105557	0.0096066	0.0056663	0.0003016
Medium (MOL) End	0.1142606	0.0090717	0.0120574	0.0034533	0.0005801
Tight Bar	0.5221603	0.0108251	0.0107123	0.0044806	0.0033405
Tight Cra	0.4258110	0.0202209	0.0199809	0.0129987	0.0030503
Tight End	0.6693459	0.0215291	0.0189937	0.0070711	0.0040436
Tight (TOL) Bar	0.1473697	0.0454339	0.0454440	0.0025957	0.0008784
Tight (TOL) Cra	0.0841024	0.0247418	0.0242085	0.0101285	0.0007094
Tight (TOL) End	0.2020279	0.0458058	0.0461432	0.0138878	0.0002641
Tight (MOL) Bar	0.0645829	0.0027200	0.0026008	0.0017196	0.0003743
Tight (MOL) Cra	0.0233304	0.0082384	0.0080434	0.0039877	0.0000362
Tight (MOL) End	0.0831794	0.0071913	0.0089827	0.0029457	0.0004003

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9489735	0.0145729	0.0144615	0.0038795	0.0063590
Loose Cra	0.9107091	0.0129717	0.0129878	0.0119521	0.0050405
Loose End	0.9558504	0.0158392	0.0161136	0.0055851	0.0065001
Loose (TOL) Bar	0.2822676	0.0694777	0.0695079	0.0035294	0.0017109
Loose (TOL) Cra	0.2461867	0.0370318	0.0355427	0.0153334	0.0026234
Loose (TOL) End	0.3382578	0.0672027	0.0682655	0.0122750	0.0006951
Loose (MOL) Bar	0.1367606	0.0050359	0.0052483	0.0024970	0.0007522
Loose (MOL) Cra	0.0872673	0.0137548	0.0123606	0.0088404	0.0018716
Loose (MOL) End	0.1401506	0.0111289	0.0140510	0.0038164	0.0005824
Medium Bar	0.8845859	0.0155390	0.0153029	0.0042662	0.0059090
Medium Cra	0.7663508	0.0175771	0.0178344	0.0140405	0.0043430
Medium End	0.8971922	0.0187037	0.0185394	0.0062854	0.0054497
Medium (TOL) Bar	0.2621081	0.0675142	0.0675225	0.0034232	0.0016138
Medium (TOL) Cra	0.1940939	0.0252968	0.0245078	0.0120016	0.0014924
Medium (TOL) End	0.3127984	0.0660890	0.0661861	0.0145354	0.0013324
Medium (MOL) Bar	0.1246644	0.0044588	0.0045026	0.0023896	0.0007206
Medium (MOL) Cra	0.0677069	0.0105285	0.0090006	0.0073303	0.0015272
Medium (MOL) End	0.1269837	0.0094781	0.0123757	0.0036445	0.0005128
Tight Bar	0.7845273	0.0151732	0.0147497	0.0045867	0.0051228
Tight Cra	0.5804911	0.0286416	0.0294596	0.0154741	0.0032518
Tight End	0.8105754	0.0215758	0.0210504	0.0068413	0.0050909
Tight (TOL) Bar	0.2312718	0.0642591	0.0642636	0.0032328	0.0014132
Tight (TOL) Cra	0.1387152	0.0176470	0.0157585	0.0118236	0.0010511
Tight (TOL) End	0.2637051	0.0845179	0.0799078	0.0501934	0.0177847
Tight (MOL) Bar	0.1054911	0.0040481	0.0039331	0.0022000	0.0006156
Tight (MOL) Cra	0.0493749	0.0075686	0.0064501	0.0062677	0.0012526
Tight (MOL) End	0.1109137	0.0078098	0.0114695	0.0034093	0.0005075

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8443415	0.0111688	0.0111236	0.0043794	0.0056537
Loose Cra	0.8703219	0.0158985	0.0154953	0.0127142	0.0053284
Loose End	0.8760388	0.0136134	0.0137636	0.0063927	0.0059887
Loose (TOL) Bar	0.2568242	0.0629698	0.0630270	0.0033804	0.0015262
Loose (TOL) Cra	0.2292504	0.0398166	0.0373448	0.0122946	0.0005203
Loose (TOL) End	0.3120588	0.0626727	0.0634939	0.0121792	0.0002815
Loose (MOL) Bar	0.1238595	0.0047806	0.0050385	0.0023778	0.0006838
Loose (MOL) Cra	0.0802785	0.0135143	0.0126520	0.0071095	0.0010716
Loose (MOL) End	0.1291953	0.0102269	0.0134500	0.0036732	0.0005756
Medium Bar	0.5783428	0.0070036	0.0074438	0.0045873	0.0038545
Medium Cra	0.7001088	0.0207556	0.0202719	0.0140867	0.0043061
Medium End	0.6088958	0.0128169	0.0095033	0.0070525	0.0038615
Medium (TOL) Bar	0.1846705	0.0421877	0.0422565	0.0028982	0.0011270
Medium (TOL) Cra	0.1799648	0.0307786	0.0294092	0.0097412	0.0003888
Medium (TOL) End	0.2193427	0.0427393	0.0434270	0.0047638	0.0009860
Medium (MOL) Bar	0.0888516	0.0042363	0.0044699	0.0020181	0.0005139
Medium (MOL) Cra	0.0643851	0.0088088	0.0086101	0.0053128	0.0003436
Medium (MOL) End	0.0931597	0.0081293	0.0108882	0.0031211	0.0004553
Tight Bar	0.3458023	0.0048885	0.0055518	0.0038734	0.0022119
Tight Cra	0.4716727	0.0158858	0.0149675	0.0133877	0.0034771
Tight End	0.0047994	0.7612683	0.6619954	0.5411137	0.3741017
Tight (TOL) Bar	0.1161886	0.0259533	0.0259714	0.0023080	0.0006945
Tight (TOL) Cra	0.1250174	0.0196764	0.0186057	0.0074098	0.0008287
Tight (TOL) End	0.0000000	0.1769097	0.1280057	0.0000000	0.1280057
Tight (MOL) Bar	0.0554920	0.0026560	0.0028368	0.0015940	0.0003206
Tight (MOL) Cra	0.0458589	0.0078838	0.0073066	0.0058913	0.0004414
Tight (MOL) End	0.0358085	0.0351679	0.0269341	0.0024174	0.0195481

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0760536	0.0196162	0.0196102	0.0018581	0.0004131
Loose Cra	0.0339996	0.0047675	0.0044219	0.0038552	0.0002480
Loose End	0.5577756	0.0282623	0.0299380	0.0069053	0.0036980
Loose (TOL) Bar	0.0590262	0.0209796	0.0209707	0.0028686	0.0002851
Loose (TOL) Cra	0.0287673	0.0045830	0.0042030	0.0035454	0.0002082
Loose (TOL) End	0.1339990	0.0205203	0.0222614	0.0037440	0.0006725
Loose (MOL) Bar	0.0176349	0.0028576	0.0028439	0.0022603	0.0000779
Loose (MOL) Cra	0.0061043	0.0020579	0.0017038	0.0016322	0.0000463
Loose (MOL) End	0.0753737	0.0037626	0.0068545	0.0028096	0.0003711
Medium Bar	0.0702079	0.0191720	0.0191610	0.0017907	0.0003964
Medium Cra	0.0309535	0.0043875	0.0043344	0.0036854	0.0002308
Medium End	0.5407593	0.0286082	0.0296985	0.0068477	0.0035650
Medium (TOL) Bar	0.0549857	0.0202356	0.0202255	0.0015845	0.0003112
Medium (TOL) Cra	0.0261578	0.0043824	0.0041764	0.0033864	0.0001950
Medium (TOL) End	0.1270084	0.0199076	0.0217280	0.0036374	0.0006399
Medium (MOL) Bar	0.0159456	0.0020314	0.0020019	0.0016938	0.0000500
Medium (MOL) Cra	0.0052332	0.0019338	0.0017125	0.0015117	0.0000406
Medium (MOL) End	0.0709510	0.0033932	0.0068757	0.0027189	0.0003483
Tight Bar	0.0499025	0.0153667	0.0153547	0.0015108	0.0002889
Tight Cra	0.0165623	0.0027822	0.0028112	0.0026897	0.0001192
Tight End	0.4333997	0.0226347	0.0242315	0.0064178	0.0027233
Tight (TOL) Bar	0.0396761	0.0160128	0.0159987	0.0013465	0.0002292
Tight (TOL) Cra	0.0135110	0.0025615	0.0025088	0.0024289	0.0000969
Tight (TOL) End	0.0981126	0.0174095	0.0184710	0.0031993	0.0004967
Tight (MOL) Bar	0.0105521	0.0013045	0.0012815	0.0011950	0.0000239
Tight (MOL) Cra	0.0030513	0.0013438	0.0012371	0.0011535	0.0000223
Tight (MOL) End	0.0538804	0.0037471	0.0056718	0.0023670	0.0002633

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0824352	0.0203672	0.0203646	0.0019410	0.0004687
Loose Cra	0.0335533	0.0050044	0.0048715	0.0038320	0.0002344
Loose End	0.5598900	0.0279896	0.0291877	0.0068701	0.0035614
Loose (TOL) Bar	0.0635238	0.0219269	0.0219194	0.0033831	0.0003093
Loose (TOL) Cra	0.0282491	0.0050269	0.0047171	0.0035196	0.0001228
Loose (TOL) End	0.1338757	0.0206991	0.0224626	0.0037262	0.0006515
Loose (MOL) Bar	0.0194411	0.0028869	0.0028828	0.0022185	0.0001242
Loose (MOL) Cra	0.0059819	0.0024432	0.0021881	0.0016316	0.0000761
Loose (MOL) End	0.0756628	0.0038874	0.0072522	0.0028045	0.0003532
Medium Bar	0.0772595	0.0200388	0.0200286	0.0018808	0.0004441
Medium Cra	0.0277947	0.0045306	0.0043981	0.0034930	0.0001011
Medium End	0.5332051	0.0275095	0.0283623	0.0068756	0.0032757
Medium (TOL) Bar	0.0600360	0.0213074	0.0212951	0.0016574	0.0003459
Medium (TOL) Cra	0.0229772	0.0049090	0.0047507	0.0038221	0.0000434
Medium (TOL) End	0.1257541	0.0200563	0.0216594	0.0036244	0.0006134
Medium (MOL) Bar	0.0177096	0.0023557	0.0023275	0.0020028	0.0000031
Medium (MOL) Cra	0.0041745	0.0023279	0.0023105	0.0017963	0.0001526
Medium (MOL) End	0.0698023	0.0034692	0.0068358	0.0026978	0.0003251
Tight Bar	0.0691764	0.0193451	0.0193346	0.0017802	0.0004041
Tight Cra	0.0209204	0.0036846	0.0035840	0.0030248	0.0001501
Tight End	0.4904891	0.0260121	0.0271224	0.0067419	0.0030236
Tight (TOL) Bar	0.0541334	0.0205181	0.0205085	0.0015740	0.0003175
Tight (TOL) Cra	0.0174332	0.0034919	0.0034177	0.0027605	0.0001246
Tight (TOL) End	0.1121558	0.0360382	0.0361613	0.0316687	0.0016271
Tight (MOL) Bar	0.0151754	0.0011380	0.0010964	0.0008316	0.0000835
Tight (MOL) Cra	0.0030515	0.0014727	0.0013761	0.0011537	0.0000225
Tight (MOL) End	0.0635362	0.0032301	0.0067296	0.0025744	0.0003007

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0735991	0.0175455	0.0175448	0.0035966	0.0000824
Loose Cra	0.0326808	0.0045753	0.0044661	0.0037848	0.0002273
Loose End	0.5095668	0.0260316	0.0272610	0.0067572	0.0030693
Loose (TOL) Bar	0.0568454	0.0188308	0.0188266	0.0033023	0.0000883
Loose (TOL) Cra	0.0274120	0.0045246	0.0042445	0.0034673	0.0001511
Loose (TOL) End	0.1249012	0.0186757	0.0204383	0.0036061	0.0005791
Loose (MOL) Bar	0.0179726	0.0027060	0.0027107	0.0021688	0.0005083
Loose (MOL) Cra	0.0055663	0.0019251	0.0015909	0.0015725	0.0000590
Loose (MOL) End	0.0708296	0.0037646	0.0069291	0.0027158	0.0003292
Medium Bar	0.0480842	0.0098975	0.0099099	0.0014829	0.0002779
Medium Cra	0.0255374	0.0040889	0.0040189	0.0033528	0.0000073
Medium End	0.3336347	0.0353091	0.0333203	0.0059459	0.0123184
Medium (TOL) Bar	0.0370862	0.0107473	0.0107556	0.0013016	0.0002148
Medium (TOL) Cra	0.0215755	0.0058626	0.0057416	0.0052654	0.0000602
Medium (TOL) End	0.0846211	0.0286120	0.0282744	0.0261106	0.0030694
Medium (MOL) Bar	0.0118034	0.0018682	0.0018742	0.0014704	0.0000352
Medium (MOL) Cra	0.0035526	0.0024970	0.0024594	0.0023614	0.0003418
Medium (MOL) End	0.0511964	0.0030917	0.0052574	0.0023071	0.0002397
Tight Bar	0.0277448	0.0049515	0.0049556	0.0013872	0.0001365
Tight Cra	0.0143822	0.0030424	0.0027738	0.0025063	0.0001026
Tight End	0.0258970	0.4154008	0.3663066	0.3056084	0.1952224
Tight (TOL) Bar	0.0212581	0.0055619	0.0055590	0.0010824	0.0001113
Tight (TOL) Cra	0.0113317	0.0028555	0.0024329	0.0022242	0.0000812
Tight (TOL) End	0.0000000	0.0764374	0.0553566	0.0000000	0.0553566
Tight (MOL) Bar	0.0070808	0.0011921	0.0012243	0.0007431	0.0000133
Tight (MOL) Cra	0.0026155	0.0015078	0.0015493	0.0010680	0.0000192
Tight (MOL) End	0.0310579	0.0022227	0.0031434	0.0017940	0.0001564

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0188504	0.0030129	0.0030127	0.0022489	0.0000081
Loose Cra	0.0165668	0.0030395	0.0030663	0.0026899	0.0001237
Loose End	0.0563973	0.0032918	0.0051996	0.0024274	0.0003244
Loose (TOL) Bar	0.0143201	0.0031080	0.0030951	0.0021549	0.0000489
Loose (TOL) Cra	0.0139506	0.0028442	0.0028027	0.0024680	0.0001038
Loose (TOL) End	0.0325010	0.0047695	0.0057222	0.0018370	0.0001670
Loose (MOL) Bar	0.0103834	0.0026636	0.0026593	0.0021095	0.0001449
Loose (MOL) Cra	0.0039239	0.0017800	0.0016170	0.0013083	0.0000295
Loose (MOL) End	0.0192220	0.0029677	0.0034753	0.0014100	0.0000876
Medium Bar	0.0162753	0.0023264	0.0023206	0.0016998	0.0000086
Medium Cra	0.0148244	0.0028183	0.0031206	0.0025466	0.0001122
Medium End	0.0522637	0.0026180	0.0046961	0.0023313	0.0002838
Medium (TOL) Bar	0.0125777	0.0023547	0.0023373	0.0015665	0.0000291
Medium (TOL) Cra	0.0122087	0.0027818	0.0027869	0.0023104	0.0000927
Medium (TOL) End	0.0290984	0.0039236	0.0049775	0.0017354	0.0001410
Medium (MOL) Bar	0.0091562	0.0018161	0.0017963	0.0014695	0.0001068
Medium (MOL) Cra	0.0034887	0.0014326	0.0012709	0.0012340	0.0000270
Medium (MOL) End	0.0170602	0.0022517	0.0030324	0.0013269	0.0000747
Tight Bar	0.0103118	0.0012623	0.0012514	0.0006853	0.0000547
Tight Cra	0.0082819	0.0019649	0.0024964	0.0019011	0.0000604
Tight End	0.0392008	0.0023695	0.0040851	0.0020171	0.0002159
Tight (TOL) Bar	0.0082075	0.0012180	0.0011926	0.0006118	0.0000289
Tight (TOL) Cra	0.0065384	0.0018169	0.0019989	0.0016890	0.0000477
Tight (TOL) End	0.0205690	0.0035827	0.0040802	0.0014580	0.0001044
Tight (MOL) Bar	0.0060259	0.0010915	0.0010784	0.0009820	0.0000290
Tight (MOL) Cra	0.0021795	0.0010728	0.0010052	0.0009749	0.0000159
Tight (MOL) End	0.0118207	0.0022541	0.0024878	0.0011039	0.0000536

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0213220	0.0031741	0.0031857	0.0022183	0.0000396
Loose Cra	0.0163507	0.0053301	0.0054214	0.0047803	0.0000924
Loose End	0.0562735	0.0033472	0.0054871	0.0024174	0.0003030
Loose (TOL) Bar	0.0160791	0.0032450	0.0032321	0.0019769	0.0000521
Loose (TOL) Cra	0.0136950	0.0052303	0.0052290	0.0044471	0.0001518
Loose (TOL) End	0.0321821	0.0050343	0.0059744	0.0018246	0.0001551
Loose (MOL) Bar	0.0115179	0.0025411	0.0025447	0.0018254	0.0002303
Loose (MOL) Cra	0.0040935	0.0033497	0.0032275	0.0029160	0.0002336
Loose (MOL) End	0.0192167	0.0031300	0.0036527	0.0014081	0.0000824
Medium Bar	0.0187698	0.0020617	0.0020534	0.0009249	0.0001082
Medium Cra	0.0120426	0.0033871	0.0034899	0.0028336	0.0000734
Medium End	0.0516469	0.0029730	0.0049510	0.0023181	0.0002809
Medium (TOL) Bar	0.0143157	0.0022694	0.0022396	0.0008075	0.0000822
Medium (TOL) Cra	0.0098614	0.0034328	0.0034548	0.0025838	0.0000910
Medium (TOL) End	0.0288929	0.0043731	0.0051853	0.0017295	0.0001402
Medium (MOL) Bar	0.0102248	0.0019377	0.0019136	0.0015461	0.0000775
Medium (MOL) Cra	0.0024181	0.0017467	0.0016965	0.0014440	0.0001781
Medium (MOL) End	0.0165453	0.0022772	0.0028303	0.0013067	0.0000713
Tight Bar	0.0154978	0.0017242	0.0017188	0.0008403	0.0000896
Tight Cra	0.0082820	0.0021039	0.0021631	0.0019014	0.0000605
Tight End	0.0459904	0.0025713	0.0043816	0.0021878	0.0002521
Tight (TOL) Bar	0.0119073	0.0018282	0.0018068	0.0007364	0.0000687
Tight (TOL) Cra	0.0065386	0.0020795	0.0021033	0.0016893	0.0000479
Tight (TOL) End	0.0252966	0.0038378	0.0045227	0.0016183	0.0001252
Tight (MOL) Bar	0.0085248	0.0013462	0.0013260	0.0011324	0.0000153
Tight (MOL) Cra	0.0017438	0.0010169	0.0009717	0.0008720	0.0000129
Tight (MOL) End	0.0146970	0.0019210	0.0025968	0.0012316	0.0000648

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0200175	0.0028787	0.0028840	0.0021674	0.0003159
Loose Cra	0.0160311	0.0031727	0.0032852	0.0026552	0.0000207
Loose End	0.0531776	0.0035800	0.0056297	0.0023511	0.0002768
Loose (TOL) Bar	0.0150828	0.0029404	0.0029376	0.0019729	0.0004158
Loose (TOL) Cra	0.0133955	0.0037070	0.0035943	0.0030634	0.0000186
Loose (TOL) End	0.0307356	0.0050237	0.0059889	0.0017834	0.0001411
Loose (MOL) Bar	0.0108782	0.0023377	0.0023495	0.0018370	0.0005989
Loose (MOL) Cra	0.0042368	0.0021108	0.0019310	0.0019043	0.0000904
Loose (MOL) End	0.0185981	0.0030955	0.0036860	0.0013855	0.0000777
Medium Bar	0.0142251	0.0016179	0.0016469	0.0008050	0.0000820
Medium Cra	0.0124074	0.0043128	0.0046858	0.0040483	0.0001413
Medium End	0.0393715	0.0027395	0.0047879	0.0020211	0.0001819
Medium (TOL) Bar	0.0107710	0.0018045	0.0018112	0.0007003	0.0000620
Medium (TOL) Cra	0.0101827	0.0041345	0.0041606	0.0037154	0.0002024
Medium (TOL) End	0.0214508	0.0087550	0.0087567	0.0077972	0.0009578
Medium (MOL) Bar	0.0073898	0.0016242	0.0016260	0.0012570	0.0000658
Medium (MOL) Cra	0.0031727	0.0023062	0.0022288	0.0021315	0.0002890
Medium (MOL) End	0.0132936	0.0061576	0.0062221	0.0055136	0.0007246
Tight Bar	0.0086803	0.0010694	0.0011141	0.0006286	0.0000499
Tight Cra	0.0056663	0.0018764	0.0019900	0.0015723	0.0000410
Tight End	0.0239638	0.0020955	0.0029043	0.0015747	0.0001226
Tight (TOL) Bar	0.0065393	0.0011766	0.0011917	0.0005457	0.0000326
Tight (TOL) Cra	0.0043587	0.0016989	0.0014844	0.0013788	0.0000316
Tight (TOL) End	0.0140851	0.0023005	0.0026770	0.0012056	0.0000669
Tight (MOL) Bar	0.0044892	0.0010973	0.0011155	0.0007080	0.0000293
Tight (MOL) Cra	0.0021796	0.0013520	0.0012990	0.0009749	0.0000160
Tight (MOL) End	0.0082232	0.0013387	0.0016829	0.0009204	0.0000374

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0059927	0.0023783	0.0023797	0.0018840	0.0001074
Loose Cra	0.0052311	0.0015731	0.0015266	0.0015106	0.0000386
Loose End	0.0403326	0.0025793	0.0039141	0.0020485	0.0002221
Loose (TOL) Bar	0.0056802	0.0024209	0.0024225	0.0018833	0.0001036
Loose (TOL) Cra	0.0052312	0.0015731	0.0015266	0.0015106	0.0000386
Loose (TOL) End	0.0192300	0.0031702	0.0039024	0.0014102	0.0000956
Loose (MOL) Bar	0.0038361	0.0023106	0.0023117	0.0018740	0.0001402
Loose (MOL) Cra	0.0013078	0.0008896	0.0008389	0.0007551	0.0000097
Loose (MOL) End	0.0140811	0.0025671	0.0030167	0.0012056	0.0000629
Medium Bar	0.0049460	0.0016198	0.0016201	0.0012128	0.0001148
Medium Cra	0.0047967	0.0016436	0.0016485	0.0014471	0.0000368
Medium End	0.0389931	0.0020933	0.0039197	0.0020120	0.0002128
Medium (TOL) Bar	0.0047226	0.0016444	0.0016448	0.0012066	0.0001123
Medium (TOL) Cra	0.0047967	0.0016436	0.0016485	0.0014471	0.0000369
Medium (TOL) End	0.0184071	0.0024749	0.0035986	0.0013790	0.0000913
Medium (MOL) Bar	0.0031567	0.0014566	0.0014571	0.0011477	0.0001419
Medium (MOL) Cra	0.0013083	0.0008511	0.0008210	0.0007555	0.0000101
Medium (MOL) End	0.0132586	0.0017825	0.0025809	0.0011694	0.0000589
Tight Bar	0.0032812	0.0009597	0.0009637	0.0008055	0.0000174
Tight Cra	0.0021794	0.0010983	0.0012629	0.0009748	0.0000159
Tight End	0.0305583	0.0019117	0.0034084	0.0017794	0.0001684
Tight (TOL) Bar	0.0031432	0.0009518	0.0009561	0.0007936	0.0000198
Tight (TOL) Cra	0.0021794	0.0010983	0.0012629	0.0009748	0.0000159
Tight (TOL) End	0.0138849	0.0022657	0.0029212	0.0011971	0.0000714
Tight (MOL) Bar	0.0022173	0.0007783	0.0007858	0.0007147	0.0000420
Tight (MOL) Cra	0.0004359	0.0004551	0.0004489	0.0004359	0.0000032
Tight (MOL) End	0.0093544	0.0016281	0.0019263	0.0009818	0.0000431

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0073600	0.0022682	0.0022934	0.0015462	0.0000956
Loose Cra	0.0039923	0.0030683	0.0030702	0.0029677	0.0003349
Loose End	0.0405288	0.0025957	0.0044131	0.0020498	0.0002136
Loose (TOL) Bar	0.0070237	0.0023134	0.0023393	0.0015310	0.0000705
Loose (TOL) Cra	0.0039949	0.0030671	0.0030691	0.0029668	0.0003322
Loose (TOL) End	0.0193291	0.0034060	0.0042794	0.0014126	0.0000924
Loose (MOL) Bar	0.0048060	0.0020496	0.0020787	0.0014123	0.0001192
Loose (MOL) Cra	0.0004952	0.0021948	0.0021793	0.0021321	0.0003703
Loose (MOL) End	0.0141813	0.0026357	0.0031737	0.0012091	0.0000608
Medium Bar	0.0062374	0.0016930	0.0016951	0.0011652	0.0000434
Medium Cra	0.0032772	0.0018297	0.0018769	0.0016264	0.0001845
Medium End	0.0369294	0.0020531	0.0038983	0.0019577	0.0001955
Medium (TOL) Bar	0.0059265	0.0017384	0.0017415	0.0011434	0.0000380
Medium (TOL) Cra	0.0032775	0.0018298	0.0018769	0.0016265	0.0001842
Medium (TOL) End	0.0168619	0.0025021	0.0034634	0.0013196	0.0000810
Medium (MOL) Bar	0.0039705	0.0013809	0.0013850	0.0010049	0.0000962
Medium (MOL) Cra	0.0006540	0.0010207	0.0010145	0.0009679	0.0002115
Medium (MOL) End	0.0120238	0.0017397	0.0023690	0.0011134	0.0000520
Tight Bar	0.0049455	0.0009893	0.0009926	0.0004747	0.0000203
Tight Cra	0.0026156	0.0012285	0.0013424	0.0010681	0.0000193
Tight End	0.0335424	0.0019427	0.0036546	0.0018661	0.0001852
Tight (TOL) Bar	0.0046715	0.0010537	0.0010574	0.0004614	0.0000174
Tight (TOL) Cra	0.0026156	0.0012285	0.0013424	0.0010681	0.0000193
Tight (TOL) End	0.0154267	0.0022628	0.0032135	0.0012623	0.0000783
Tight (MOL) Bar	0.0030929	0.0007863	0.0007919	0.0005424	0.0000249
Tight (MOL) Cra	0.0008719	0.0006697	0.0006527	0.0006166	0.0000065
Tight (MOL) End	0.0108961	0.0014119	0.0021466	0.0010600	0.0000499

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0064754	0.0021662	0.0021712	0.0015711	0.0005735
Loose Cra	0.0037403	0.0021056	0.0019191	0.0018900	0.0001541
Loose End	0.0380583	0.0027290	0.0044460	0.0019867	0.0001989
Loose (TOL) Bar	0.0060759	0.0022002	0.0022056	0.0015497	0.0005664
Loose (TOL) Cra	0.0037416	0.0021049	0.0019183	0.0018892	0.0001528
Loose (TOL) End	0.0184023	0.0032477	0.0042100	0.0013784	0.0000866
Loose (MOL) Bar	0.0040999	0.0020393	0.0020474	0.0014849	0.0006445
Loose (MOL) Cra	0.0006952	0.0015802	0.0013668	0.0012725	0.0001702
Loose (MOL) End	0.0137699	0.0025813	0.0032014	0.0011915	0.0000586
Medium Bar	0.0049935	0.0010794	0.0010950	0.0004768	0.0000231
Medium Cra	0.0030845	0.0024526	0.0024726	0.0023828	0.0003772
Medium End	0.0301293	0.0022339	0.0041425	0.0017667	0.0001487
Medium (TOL) Bar	0.0046767	0.0011401	0.0011560	0.0004614	0.0000226
Medium (TOL) Cra	0.0030859	0.0024525	0.0024725	0.0023828	0.0003758
Medium (TOL) End	0.0151113	0.0024087	0.0036022	0.0012488	0.0000698
Medium (MOL) Bar	0.0031518	0.0011912	0.0012002	0.0008702	0.0000111
Medium (MOL) Cra	0.0004400	0.0015677	0.0015590	0.0014999	0.0004255
Medium (MOL) End	0.0107908	0.0018324	0.0025998	0.0010546	0.0000469
Tight Bar	0.0028631	0.0006739	0.0006978	0.0003608	0.0000165
Tight Cra	0.0008718	0.0007122	0.0006306	0.0006165	0.0000064
Tight End	0.0187182	0.0017539	0.0025934	0.0013908	0.0000954
Tight (TOL) Bar	0.0027268	0.0007047	0.0007283	0.0003521	0.0000157
Tight (TOL) Cra	0.0008718	0.0007122	0.0006306	0.0006165	0.0000064
Tight (TOL) End	0.0099727	0.0016008	0.0021866	0.0010139	0.0000474
Tight (MOL) Bar	0.0018419	0.0006586	0.0006803	0.0002910	0.0000107
Tight (MOL) Cra	0.0004359	0.0004551	0.0004489	0.0004359	0.0000032
Tight (MOL) End	0.0065786	0.0011833	0.0016091	0.0008231	0.0000299

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0147577	0.0034183	0.0034435	0.0022365	0.0003795
Loose Cra	0.0100269	0.0021912	0.0021636	0.0020916	0.0000745
Loose End	0.0495692	0.0038796	0.0043541	0.0022711	0.0002496
Loose (TOL) Bar	0.0139678	0.0033542	0.0033810	0.0022280	0.0004012
Loose (TOL) Cra	0.0100269	0.0021912	0.0021636	0.0020916	0.0000745
Loose (TOL) End	0.0304337	0.0045635	0.0046825	0.0017758	0.0001461
Loose (MOL) Bar	0.0079595	0.0028219	0.0028487	0.0021541	0.0003547
Loose (MOL) Cra	0.0026158	0.0013083	0.0012944	0.0010680	0.0000195
Loose (MOL) End	0.0154175	0.0028850	0.0028064	0.0012617	0.0000691
Medium Bar	0.0092436	0.0023359	0.0023380	0.0015073	0.0002453
Medium Cra	0.0061046	0.0016579	0.0016560	0.0016327	0.0000466
Medium End	0.0366080	0.0024228	0.0030479	0.0019475	0.0001811
Medium (TOL) Bar	0.0086908	0.0023197	0.0023225	0.0014881	0.0002559
Medium (TOL) Cra	0.0061046	0.0016579	0.0016560	0.0016327	0.0000466
Medium (TOL) End	0.0202545	0.0030699	0.0033239	0.0014463	0.0000969
Medium (MOL) Bar	0.0042986	0.0017708	0.0017749	0.0013473	0.0003103
Medium (MOL) Cra	0.0004361	0.0005016	0.0004960	0.0004361	0.0000033
Medium (MOL) End	0.0101766	0.0017263	0.0019728	0.0010240	0.0000466
Tight Bar	0.0052762	0.0013185	0.0013244	0.0009582	0.0000105
Tight Cra	0.0021795	0.0010950	0.0012601	0.0009748	0.0000159
Tight End	0.0171740	0.0015220	0.0018757	0.0013317	0.0000861
Tight (TOL) Bar	0.0049510	0.0013048	0.0013117	0.0009364	0.0000195
Tight (TOL) Cra	0.0021795	0.0010950	0.0012601	0.0009748	0.0000159
Tight (TOL) End	0.0097680	0.0016973	0.0016724	0.0010034	0.0000473
Tight (MOL) Bar	0.0027156	0.0008696	0.0008828	0.0007777	0.0000407
Tight (MOL) Cra	0.0000000	0.0003348	0.0003348	0.0000000	0.0000000
Tight (MOL) End	0.0049348	0.0009374	0.0009711	0.0007127	0.0000234

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0162047	0.0035323	0.0035568	0.0021176	0.0007399
Loose Cra	0.0104670	0.0023488	0.0023505	0.0021384	0.0000819
Loose End	0.0495440	0.0037044	0.0040497	0.0022659	0.0002244
Loose (TOL) Bar	0.0151523	0.0034320	0.0034581	0.0020301	0.0007530
Loose (TOL) Cra	0.0104670	0.0023488	0.0023505	0.0021384	0.0000819
Loose (TOL) End	0.0299047	0.0042703	0.0044072	0.0017580	0.0001288
Loose (MOL) Bar	0.0087042	0.0027509	0.0027961	0.0018301	0.0007395
Loose (MOL) Cra	0.0034886	0.0013302	0.0013517	0.0012338	0.0000269
Loose (MOL) End	0.0159250	0.0029339	0.0028713	0.0012813	0.0000650
Medium Bar	0.0123408	0.0025628	0.0025702	0.0016575	0.0002207
Medium Cra	0.0061037	0.0017377	0.0018055	0.0016322	0.0000457
Medium End	0.0307134	0.0025726	0.0025885	0.0017836	0.0001189
Medium (TOL) Bar	0.0117336	0.0025394	0.0025484	0.0016243	0.0002405
Medium (TOL) Cra	0.0061037	0.0017377	0.0018055	0.0016322	0.0000457
Medium (TOL) End	0.0188073	0.0040948	0.0040132	0.0032238	0.0001224
Medium (MOL) Bar	0.0070494	0.0018672	0.0018844	0.0014058	0.0001803
Medium (MOL) Cra	0.0021799	0.0010985	0.0011124	0.0009751	0.0000163
Medium (MOL) End	0.0099415	0.0022975	0.0022611	0.0020104	0.0003931
Tight Bar	0.0090844	0.0016710	0.0016785	0.0008867	0.0000431
Tight Cra	0.0047957	0.0015734	0.0017589	0.0014466	0.0000358
Tight End	0.0172739	0.0018229	0.0019131	0.0013359	0.0000837
Tight (TOL) Bar	0.0087600	0.0016535	0.0016620	0.0008728	0.0000512
Tight (TOL) Cra	0.0047957	0.0015734	0.0017589	0.0014466	0.0000358
Tight (TOL) End	0.0106918	0.0018404	0.0019003	0.0010500	0.0000502
Tight (MOL) Bar	0.0052192	0.0010017	0.0010165	0.0007392	0.0000223
Tight (MOL) Cra	0.0017438	0.0009614	0.0009796	0.0008721	0.0000130
Tight (MOL) End	0.0062707	0.0008272	0.0011387	0.0008036	0.0000290

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0140420	0.0032689	0.0032710	0.0021562	0.0008241
Loose Cra	0.0069769	0.0019591	0.0018652	0.0017454	0.0000535
Loose End	0.0386137	0.0061429	0.0062940	0.0052512	0.0000380
Loose (TOL) Bar	0.0130622	0.0032196	0.0032225	0.0021045	0.0008549
Loose (TOL) Cra	0.0069769	0.0019593	0.0018654	0.0017454	0.0000535
Loose (TOL) End	0.0217351	0.0053377	0.0053564	0.0041913	0.0003667
Loose (MOL) Bar	0.0073394	0.0025352	0.0025384	0.0018372	0.0007488
Loose (MOL) Cra	0.0017441	0.0011980	0.0010161	0.0008722	0.0000133
Loose (MOL) End	0.0123271	0.0034145	0.0035552	0.0028054	0.0002586
Medium Bar	0.0093303	0.0021418	0.0021452	0.0014967	0.0002038
Medium Cra	0.0056677	0.0016507	0.0016839	0.0015727	0.0000425
Medium End	0.0230238	0.0021453	0.0025936	0.0015427	0.0001035
Medium (TOL) Bar	0.0086239	0.0021105	0.0021145	0.0014494	0.0002325
Medium (TOL) Cra	0.0056678	0.0016507	0.0016839	0.0015727	0.0000425
Medium (TOL) End	0.0116697	0.0070235	0.0070235	0.0066957	0.0005067
Medium (MOL) Bar	0.0049727	0.0015602	0.0015651	0.0011316	0.0001784
Medium (MOL) Cra	0.0013079	0.0007559	0.0008028	0.0007552	0.0000097
Medium (MOL) End	0.0071185	0.0040358	0.0040743	0.0038352	0.0002487
Tight Bar	0.0055958	0.0011906	0.0012329	0.0007487	0.0000524
Tight Cra	0.0026154	0.0012842	0.0011398	0.0010680	0.0000192
Tight End	0.0149089	0.0014769	0.0017017	0.0012406	0.0000721
Tight (TOL) Bar	0.0052284	0.0011890	0.0012338	0.0007308	0.0000583
Tight (TOL) Cra	0.0026154	0.0012842	0.0011398	0.0010680	0.0000192
Tight (TOL) End	0.0074016	0.0013285	0.0014088	0.0008732	0.0000344
Tight (MOL) Bar	0.0026759	0.0009143	0.0009445	0.0006130	0.0000804
Tight (MOL) Cra	0.0004359	0.0004551	0.0004489	0.0004359	0.0000032
Tight (MOL) End	0.0045236	0.0007936	0.0010916	0.0006824	0.0000214

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048498	0.0026924	0.0027038	0.0019920	0.0003013
Loose Cra	0.0004359	0.0008040	0.0007159	0.0004359	0.0000032
Loose End	0.0081396	0.0038720	0.0038493	0.0026767	0.0002509
Loose (TOL) Bar	0.0044245	0.0026503	0.0026625	0.0019819	0.0003200
Loose (TOL) Cra	0.0004359	0.0008040	0.0007159	0.0004359	0.0000032
Loose (TOL) End	0.0057835	0.0035650	0.0034953	0.0026051	0.0003558
Loose (MOL) Bar	0.0032013	0.0027245	0.0027340	0.0020279	0.0002780
Loose (MOL) Cra	0.0004359	0.0008040	0.0007159	0.0004359	0.0000032
Loose (MOL) End	0.0042880	0.0036130	0.0034934	0.0025705	0.0001119
Medium Bar	0.0026584	0.0017615	0.0017616	0.0012182	0.0002787
Medium Cra	0.0004361	0.0004552	0.0004490	0.0004361	0.0000033
Medium End	0.0062696	0.0015925	0.0016251	0.0008034	0.0000279
Medium (TOL) Bar	0.0024260	0.0017352	0.0017353	0.0012050	0.0002851
Medium (TOL) Cra	0.0004361	0.0004552	0.0004490	0.0004361	0.0000033
Medium (TOL) End	0.0043494	0.0022675	0.0022700	0.0018785	0.0000505
Medium (MOL) Bar	0.0015640	0.0017317	0.0017316	0.0011873	0.0002886
Medium (MOL) Cra	0.0004361	0.0004553	0.0004491	0.0004361	0.0000033
Medium (MOL) End	0.0030833	0.0013573	0.0013844	0.0005631	0.0000136
Tight Bar	0.0013906	0.0008157	0.0008210	0.0007329	0.0000553
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0023642	0.0008163	0.0007970	0.0004931	0.0000108
Tight (TOL) Bar	0.0012978	0.0008072	0.0008128	0.0007204	0.0000578
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0019530	0.0006541	0.0006083	0.0004482	0.0000089
Tight (MOL) Bar	0.0008938	0.0007748	0.0007819	0.0006801	0.0000551
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0014392	0.0006108	0.0005948	0.0003847	0.0000066

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0052445	0.0026361	0.0026560	0.0016347	0.0006748
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0068616	0.0041330	0.0040139	0.0031875	0.0005056
Loose (TOL) Bar	0.0048759	0.0025535	0.0025752	0.0015689	0.0006819
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0051890	0.0038654	0.0036915	0.0029780	0.0006434
Loose (MOL) Bar	0.0034124	0.0026052	0.0026281	0.0015785	0.0006543
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0039571	0.0040310	0.0037834	0.0032306	0.0002382
Medium Bar	0.0038939	0.0017170	0.0017220	0.0011847	0.0001276
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0020926	0.0020682	0.0020355	0.0016816	0.0009771
Medium (TOL) Bar	0.0037043	0.0016832	0.0016888	0.0011646	0.0001365
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0015589	0.0019755	0.0019225	0.0015842	0.0009992
Medium (MOL) Bar	0.0028601	0.0016587	0.0016611	0.0011327	0.0000769
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0009120	0.0018906	0.0018503	0.0014696	0.0009298
Tight Bar	0.0023500	0.0010454	0.0010418	0.0006018	0.0000449
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0014140	0.0004128	0.0004892	0.0003953	0.0000186
Tight (TOL) Bar	0.0022568	0.0010109	0.0010072	0.0005924	0.0000476
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0009937	0.0003805	0.0004699	0.0003400	0.0000295
Tight (MOL) Bar	0.0017054	0.0008564	0.0008557	0.0002802	0.0000116
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0007992	0.0003476	0.0004774	0.0002996	0.0000194

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0048418	0.0024996	0.0025084	0.0016534	0.0006709
Loose Cra	0.0000000	0.0010449	0.0006697	0.0000000	0.0000000
Loose End	0.0055486	0.0030021	0.0030029	0.0025104	0.0008978
Loose (TOL) Bar	0.0044053	0.0024431	0.0024485	0.0016112	0.0007006
Loose (TOL) Cra	0.0000000	0.0010449	0.0006697	0.0000000	0.0000000
Loose (TOL) End	0.0040473	0.0026837	0.0026836	0.0023281	0.0009665
Loose (MOL) Bar	0.0032110	0.0024481	0.0024606	0.0016386	0.0006298
Loose (MOL) Cra	0.0000000	0.0010448	0.0006696	0.0000000	0.0000000
Loose (MOL) End	0.0030173	0.0026937	0.0026929	0.0023651	0.0007686
Medium Bar	0.0030970	0.0014783	0.0014789	0.0009452	0.0001112
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0008540	0.0040201	0.0038816	0.0029102	0.0019088
Medium (TOL) Bar	0.0028556	0.0014430	0.0014435	0.0009163	0.0001266
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0002223	0.0033407	0.0032353	0.0023567	0.0018241
Medium (MOL) Bar	0.0022253	0.0014031	0.0014073	0.0008909	0.0000340
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0020111	0.0019379	0.0000000	0.0016372
Tight Bar	0.0016921	0.0008359	0.0008398	0.0004978	0.0000701
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0020558	0.0005822	0.0006247	0.0004598	0.0000094
Tight (TOL) Bar	0.0016466	0.0008356	0.0008396	0.0004922	0.0000705
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0015419	0.0004561	0.0005372	0.0003982	0.0000070
Tight (MOL) Bar	0.0011846	0.0008283	0.0008288	0.0004383	0.0000354
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0012335	0.0003902	0.0005038	0.0003561	0.0000056

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0024945	0.0024920	0.0025000	0.0019675	0.0003070
Loose Cra	0.0004360	0.0008042	0.0007161	0.0004361	0.0000033
Loose End	0.0025751	0.0029008	0.0028742	0.0023442	0.0003923
Loose (TOL) Bar	0.0022049	0.0024680	0.0024765	0.0019542	0.0003255
Loose (TOL) Cra	0.0004360	0.0008042	0.0007161	0.0004361	0.0000033
Loose (TOL) End	0.0021391	0.0028692	0.0028291	0.0023275	0.0004190
Loose (MOL) Bar	0.0014957	0.0025380	0.0025436	0.0019756	0.0003117
Loose (MOL) Cra	0.0004361	0.0008042	0.0007162	0.0004361	0.0000034
Loose (MOL) End	0.0015199	0.0029245	0.0028422	0.0023156	0.0002196
Medium Bar	0.0012307	0.0015087	0.0015098	0.0011641	0.0003056
Medium Cra	0.0004360	0.0004552	0.0004490	0.0004361	0.0000033
Medium End	0.0023507	0.0018561	0.0018573	0.0017051	0.0001050
Medium (TOL) Bar	0.0010879	0.0015073	0.0015085	0.0011528	0.0003128
Medium (TOL) Cra	0.0004360	0.0004552	0.0004490	0.0004361	0.0000033
Medium (TOL) End	0.0020300	0.0018469	0.0018471	0.0016743	0.0001188
Medium (MOL) Bar	0.0005203	0.0015215	0.0015221	0.0011235	0.0003382
Medium (MOL) Cra	0.0004360	0.0004552	0.0004490	0.0004361	0.0000033
Medium (MOL) End	0.0012713	0.0018726	0.0018666	0.0017220	0.0000589
Tight Bar	0.0006640	0.0006294	0.0006328	0.0005938	0.0000590
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0007195	0.0005162	0.0004779	0.0002720	0.0000033
Tight (TOL) Bar	0.0005689	0.0006173	0.0006209	0.0005784	0.0000637
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0006167	0.0005094	0.0004751	0.0002518	0.0000028
Tight (MOL) Bar	0.0003379	0.0005911	0.0005955	0.0005447	0.0000688
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0004112	0.0004969	0.0004703	0.0002056	0.0000019

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0028595	0.0022797	0.0023141	0.0014130	0.0004842
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.0011803	0.0042963	0.0041709	0.0034835	0.0012754
Loose (TOL) Bar	0.0025609	0.0022266	0.0022631	0.0013450	0.0005117
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.0008932	0.0039693	0.0038528	0.0032048	0.0012556
Loose (MOL) Bar	0.0018810	0.0022990	0.0023355	0.0013652	0.0005138
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.0003342	0.0040513	0.0039472	0.0030313	0.0013030
Medium Bar	0.0016335	0.0013211	0.0013316	0.0008924	0.0001739
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0015066	0.0013412	0.0000000	0.0012279
Medium (TOL) Bar	0.0015326	0.0013183	0.0013297	0.0008772	0.0001844
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0011538	0.0010591	0.0000000	0.0010232
Medium (MOL) Bar	0.0013064	0.0013352	0.0013395	0.0008676	0.0001395
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0006139	0.0006139	0.0000000	0.0006139
Tight Bar	0.0009160	0.0007018	0.0007006	0.0004398	0.0000781
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0004111	0.0002717	0.0002300	0.0002056	0.0000019
Tight (TOL) Bar	0.0008198	0.0006981	0.0006970	0.0004243	0.0000839
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0002056	0.0002101	0.0001666	0.0001454	0.0000009
Tight (MOL) Bar	0.0006269	0.0006979	0.0006978	0.0003841	0.0000508
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0001028	0.0001780	0.0001319	0.0001028	0.0000005

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026409	0.0021593	0.0021636	0.0014318	0.0006124
Loose Cra	0.0000000	0.0010448	0.0006697	0.0000000	0.0000000
Loose End	0.0004860	0.0036575	0.0035267	0.0027195	0.0018674
Loose (TOL) Bar	0.0023268	0.0021295	0.0021310	0.0013883	0.0006555
Loose (TOL) Cra	0.0000000	0.0010448	0.0006697	0.0000000	0.0000000
Loose (TOL) End	0.0003211	0.0034658	0.0033473	0.0025693	0.0018277
Loose (MOL) Bar	0.0017190	0.0021728	0.0021782	0.0014121	0.0006306
Loose (MOL) Cra	0.0000000	0.0010448	0.0006697	0.0000000	0.0000000
Loose (MOL) End	0.0000000	0.0021371	0.0020251	0.0000000	0.0017395
Medium Bar	0.0016623	0.0012256	0.0012256	0.0007315	0.0000548
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0010629	0.0010598	0.0000000	0.0008186
Medium (TOL) Bar	0.0015608	0.0012240	0.0012240	0.0007148	0.0000659
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0007398	0.0007398	0.0000000	0.0006139
Medium (MOL) Bar	0.0013633	0.0010577	0.0010587	0.0002489	0.0000077
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0004302	0.0004302	0.0000000	0.0004093
Tight Bar	0.0009081	0.0007856	0.0007922	0.0004153	0.0000408
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0003571	0.0015636	0.0015445	0.0015203	0.0002568
Tight (TOL) Bar	0.0009092	0.0007861	0.0007926	0.0004160	0.0000397
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0001822	0.0011402	0.0011174	0.0010931	0.0002271
Tight (MOL) Bar	0.0007264	0.0006950	0.0006961	0.0001818	0.0000035
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0001028	0.0008903	0.0008220	0.0007962	0.0002042