

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8817954	0.0117223	0.0116314	0.0028066	0.0035834
Loose Cra	0.8927544	0.0120421	0.0126125	0.0092948	0.0026258
Loose End	0.9605608	0.0106504	0.0111845	0.0037279	0.0046898
Loose (TOL) Bar	0.2719778	0.0731185	0.0731595	0.0032743	0.0007171
Loose (TOL) Cra	0.2448916	0.0297693	0.0280203	0.0102266	0.0003182
Loose (TOL) End	0.3423215	0.0733289	0.0742389	0.0055257	0.0005434
Loose (MOL) Bar	0.1274343	0.0040341	0.0043340	0.0025868	0.0003611
Loose (MOL) Cra	0.0899779	0.0083045	0.0080933	0.0070657	0.0002476
Loose (MOL) End	0.1425352	0.0115424	0.0155385	0.0029125	0.0003093
Medium Bar	0.7913566	0.0121243	0.0120541	0.0032041	0.0032711
Medium Cra	0.7851382	0.0145235	0.0133511	0.0110821	0.0026982
Medium End	0.8790038	0.0150899	0.0148403	0.0047068	0.0047329
Medium (TOL) Bar	0.2342227	0.0678816	0.0679059	0.0031965	0.0007644
Medium (TOL) Cra	0.1994529	0.0270147	0.0249431	0.0095700	0.0003261
Medium (TOL) End	0.2816623	0.0621548	0.0629190	0.0040288	0.0009813
Medium (MOL) Bar	0.1054551	0.0033119	0.0035293	0.0023434	0.0003284
Medium (MOL) Cra	0.0704393	0.0051995	0.0046476	0.0041971	0.0003447
Medium (MOL) End	0.1193004	0.0098496	0.0136140	0.0026711	0.0003467
Tight Bar	0.5092347	0.0106887	0.0105631	0.0032472	0.0020744
Tight Cra	0.4266573	0.0121146	0.0122522	0.0100467	0.0019666
Tight End	0.6698685	0.0183007	0.0158017	0.0053000	0.0029269
Tight (TOL) Bar	0.1488134	0.0486556	0.0486865	0.0019319	0.0005739
Tight (TOL) Cra	0.0875428	0.0158949	0.0152898	0.0065395	0.0002277
Tight (TOL) End	0.2039794	0.0499718	0.0497697	0.0086833	0.0000673
Tight (MOL) Bar	0.0646541	0.0022595	0.0024845	0.0018304	0.0002240
Tight (MOL) Cra	0.0263254	0.0037278	0.0036724	0.0025469	0.0001308
Tight (MOL) End	0.0850102	0.0080527	0.0101145	0.0022549	0.0002285

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.9505266	0.0106847	0.0105501	0.0026941	0.0039079
Loose Cra	0.9110727	0.0102941	0.0105144	0.0098533	0.0022684
Loose End	0.9585172	0.0110183	0.0112625	0.0040725	0.0042958
Loose (TOL) Bar	0.2923994	0.0755497	0.0755898	0.0036982	0.0008030
Loose (TOL) Cra	0.2497092	0.0307668	0.0293057	0.0165203	0.0025343
Loose (TOL) End	0.3413588	0.0730792	0.0736398	0.0079775	0.0003015
Loose (MOL) Bar	0.1398383	0.0042514	0.0046487	0.0026895	0.0004579
Loose (MOL) Cra	0.0919819	0.0093729	0.0092424	0.0089795	0.0009116
Loose (MOL) End	0.1432363	0.0114923	0.0157438	0.0029236	0.0003034
Medium Bar	0.8845689	0.0128599	0.0126759	0.0030008	0.0035632
Medium Cra	0.7584235	0.0186352	0.0171156	0.0154304	0.0007228
Medium End	0.8994234	0.0135086	0.0132423	0.0046129	0.0035299
Medium (TOL) Bar	0.2707615	0.0737267	0.0737533	0.0052252	0.0007089
Medium (TOL) Cra	0.1941118	0.0250774	0.0241436	0.0183361	0.0045300
Medium (TOL) End	0.3145907	0.0710966	0.0705093	0.0143856	0.0036795
Medium (MOL) Bar	0.1265324	0.0029224	0.0032645	0.0017855	0.0004659
Medium (MOL) Cra	0.0732837	0.0073419	0.0070580	0.0060730	0.0006915
Medium (MOL) End	0.1303100	0.0100801	0.0144374	0.0027938	0.0002799
Tight Bar	0.7834861	0.0136723	0.0134177	0.0032741	0.0030769
Tight Cra	0.5799551	0.0281879	0.0291182	0.0108979	0.0019779
Tight End	0.8122111	0.0176552	0.0172714	0.0050611	0.0033971
Tight (TOL) Bar	0.2391891	0.0699486	0.0699862	0.0056218	0.0005714
Tight (TOL) Cra	0.1475029	0.0084726	0.0079333	0.0060971	0.0005226
Tight (TOL) End	0.1113200	0.2861592	0.2649646	0.1202909	0.1754295
Tight (MOL) Bar	0.1077503	0.0027029	0.0029325	0.0016500	0.0004088
Tight (MOL) Cra	0.0559883	0.0052821	0.0051640	0.0037294	0.0002037
Tight (MOL) End	0.1138285	0.0089277	0.0135480	0.0026120	0.0002953

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.8325548	0.0088908	0.0089642	0.0031456	0.0033700
Loose Cra	0.8700698	0.0147724	0.0149069	0.0104723	0.0020126
Loose End	0.8690902	0.0094601	0.0097758	0.0047692	0.0039515
Loose (TOL) Bar	0.2628142	0.0679114	0.0679920	0.0043997	0.0005133
Loose (TOL) Cra	0.2318597	0.0319366	0.0296252	0.0131452	0.0012230
Loose (TOL) End	0.3095655	0.0686403	0.0678507	0.0152273	0.0028719
Loose (MOL) Bar	0.1248646	0.0041374	0.0046629	0.0029614	0.0002075
Loose (MOL) Cra	0.0838226	0.0080158	0.0078096	0.0070389	0.0008245
Loose (MOL) End	0.1302159	0.0106574	0.0145560	0.0027909	0.0003037
Medium Bar	0.5498048	0.0062579	0.0063917	0.0033079	0.0023002
Medium Cra	0.6926825	0.0237326	0.0231803	0.0203667	0.0002595
Medium End	0.5803975	0.0091314	0.0064153	0.0052553	0.0021851
Medium (TOL) Bar	0.1847161	0.0456093	0.0456974	0.0021435	0.0007129
Medium (TOL) Cra	0.1811506	0.0291864	0.0275368	0.0185278	0.0029387
Medium (TOL) End	0.1572195	0.1359099	0.1185548	0.0800985	0.0546464
Medium (MOL) Bar	0.0883831	0.0024442	0.0030823	0.0014949	0.0003203
Medium (MOL) Cra	0.0682324	0.0093635	0.0093471	0.0092336	0.0013772
Medium (MOL) End	0.0915382	0.0092665	0.0112635	0.0023413	0.0002167
Tight Bar	0.3206616	0.0046266	0.0048415	0.0027601	0.0013552
Tight Cra	0.4622625	0.0134521	0.0130560	0.0103136	0.0019181
Tight End	0.1362642	1.0432523	1.0202166	0.9966218	0.2149406
Tight (TOL) Bar	0.1129682	0.0270896	0.0271353	0.0016880	0.0004421
Tight (TOL) Cra	0.1244678	0.0144612	0.0135824	0.0056024	0.0005289
Tight (TOL) End	0.1246544	0.1274360	0.1781500	0.0027324	0.0002803
Tight (MOL) Bar	0.0541082	0.0015078	0.0018581	0.0011835	0.0001984
Tight (MOL) Cra	0.0482322	0.0037689	0.0034836	0.0034584	0.0002089
Tight (MOL) End	0.0550481	0.0057818	0.0067424	0.0018132	0.0001374

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0770859	0.0210930	0.0210916	0.0021495	0.0001222
Loose Cra	0.0289314	0.0057689	0.0053978	0.0050769	0.0001737
Loose End	0.5537152	0.0262327	0.0289219	0.0051316	0.0020155
Loose (TOL) Bar	0.0604908	0.0226536	0.0226553	0.0019901	0.0000373
Loose (TOL) Cra	0.0235217	0.0055418	0.0051061	0.0047680	0.0002474
Loose (TOL) End	0.1377107	0.0234013	0.0252137	0.0041919	0.0000803
Loose (MOL) Bar	0.0179555	0.0023084	0.0023271	0.0015079	0.0001151
Loose (MOL) Cra	0.0048747	0.0012848	0.0012354	0.0010913	0.0000239
Loose (MOL) End	0.0797795	0.0034118	0.0085167	0.0021827	0.0001825
Medium Bar	0.0712446	0.0205255	0.0205190	0.0019402	0.0001701
Medium Cra	0.0268189	0.0048790	0.0047223	0.0044741	0.0001032
Medium End	0.5363403	0.0263351	0.0282591	0.0051515	0.0021390
Medium (TOL) Bar	0.0562808	0.0218051	0.0218046	0.0017586	0.0001058
Medium (TOL) Cra	0.0219115	0.0047778	0.0044449	0.0041827	0.0001598
Medium (TOL) End	0.1311691	0.0227491	0.0247802	0.0027985	0.0003731
Medium (MOL) Bar	0.0160456	0.0015968	0.0015967	0.0011314	0.0000619
Medium (MOL) Cra	0.0046302	0.0012473	0.0012541	0.0010633	0.0000219
Medium (MOL) End	0.0752031	0.0029161	0.0083674	0.0021200	0.0002016
Tight Bar	0.0492387	0.0162042	0.0161927	0.0011165	0.0001863
Tight Cra	0.0141315	0.0020118	0.0020032	0.0018606	0.0000640
Tight End	0.4268465	0.0205322	0.0236374	0.0048215	0.0018185
Tight (TOL) Bar	0.0396590	0.0170497	0.0170435	0.0010020	0.0001452
Tight (TOL) Cra	0.0116948	0.0019254	0.0018369	0.0016918	0.0000528
Tight (TOL) End	0.0997070	0.0197276	0.0207114	0.0024427	0.0003139
Tight (MOL) Bar	0.0105173	0.0009445	0.0009388	0.0007752	0.0000029
Tight (MOL) Cra	0.0026804	0.0009315	0.0009236	0.0008086	0.0000125
Tight (MOL) End	0.0560622	0.0035892	0.0066378	0.0018290	0.0001499

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0826785	0.0216680	0.0216655	0.0021586	0.0001527
Loose Cra	0.0286805	0.0086161	0.0082779	0.0081064	0.0011521
Loose End	0.5531263	0.0266295	0.0287700	0.0052004	0.0020157
Loose (TOL) Bar	0.0645692	0.0234306	0.0234302	0.0018856	0.0000385
Loose (TOL) Cra	0.0231337	0.0082527	0.0077610	0.0075591	0.0013631
Loose (TOL) End	0.1370169	0.0236627	0.0254654	0.0048014	0.0001525
Loose (MOL) Bar	0.0194983	0.0019940	0.0020205	0.0011534	0.0001327
Loose (MOL) Cra	0.0054397	0.0017696	0.0017708	0.0011698	0.0001388
Loose (MOL) End	0.0794348	0.0034389	0.0085156	0.0021790	0.0001913
Medium Bar	0.0769557	0.0214880	0.0214775	0.0023229	0.0002688
Medium Cra	0.0250721	0.0036159	0.0031439	0.0024821	0.0000903
Medium End	0.5257220	0.0254361	0.0272551	0.0051786	0.0019489
Medium (TOL) Bar	0.0604436	0.0230249	0.0230199	0.0019288	0.0001662
Medium (TOL) Cra	0.0199601	0.0035106	0.0029252	0.0022126	0.0000717
Medium (TOL) End	0.1290565	0.0229324	0.0248283	0.0029855	0.0003226
Medium (MOL) Bar	0.0173196	0.0013947	0.0013876	0.0011527	0.0000040
Medium (MOL) Cra	0.0043856	0.0012190	0.0013130	0.0010346	0.0000198
Medium (MOL) End	0.0737113	0.0030697	0.0083482	0.0021006	0.0001827
Tight Bar	0.0693248	0.0208871	0.0208750	0.0013245	0.0002638
Tight Cra	0.0204561	0.0035845	0.0032631	0.0022410	0.0000826
Tight End	0.4832881	0.0231968	0.0255326	0.0050614	0.0016997
Tight (TOL) Bar	0.0547481	0.0222354	0.0222311	0.0011773	0.0002091
Tight (TOL) Cra	0.0165591	0.0032500	0.0029209	0.0020147	0.0000663
Tight (TOL) End	0.1173764	0.0218807	0.0235790	0.0026532	0.0003081
Tight (MOL) Bar	0.0145260	0.0010062	0.0009899	0.0008904	0.0000293
Tight (MOL) Cra	0.0034116	0.0012397	0.0012759	0.0009125	0.0000160
Tight (MOL) End	0.0666238	0.0031601	0.0082189	0.0019963	0.0001653

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0719052	0.0180861	0.0181023	0.0023662	0.0001256
Loose Cra	0.0285550	0.0067692	0.0064543	0.0062915	0.0007926
Loose End	0.4965499	0.0237326	0.0266298	0.0050684	0.0017051
Loose (TOL) Bar	0.0561812	0.0197221	0.0197373	0.0021188	0.0002454
Loose (TOL) Cra	0.0230582	0.0065157	0.0060423	0.0058407	0.0009535
Loose (TOL) End	0.1261229	0.0217516	0.0234039	0.0060372	0.0000403
Loose (MOL) Bar	0.0173753	0.0017426	0.0018165	0.0012797	0.0003682
Loose (MOL) Cra	0.0054842	0.0013070	0.0012514	0.0011698	0.0000942
Loose (MOL) End	0.0733529	0.0032735	0.0079746	0.0020939	0.0001778
Medium Bar	0.0454707	0.0102166	0.0102264	0.0019356	0.0000173
Medium Cra	0.0243441	0.0071374	0.0070955	0.0024445	0.0000899
Medium End	0.3209875	0.0163749	0.0172432	0.0043079	0.0008320
Medium (TOL) Bar	0.0353421	0.0112205	0.0112322	0.0016769	0.0000441
Medium (TOL) Cra	0.0197180	0.0074304	0.0073143	0.0021984	0.0000721
Medium (TOL) End	0.0458326	0.0866716	0.0754652	0.0496999	0.0392437
Medium (MOL) Bar	0.0115206	0.0012422	0.0012702	0.0010453	0.0001574
Medium (MOL) Cra	0.0041416	0.0035320	0.0035344	0.0010053	0.0000184
Medium (MOL) End	0.0512607	0.0033153	0.0060615	0.0017487	0.0001206
Tight Bar	0.0259760	0.0050635	0.0050738	0.0008934	0.0000781
Tight Cra	0.0141249	0.0021909	0.0021402	0.0018597	0.0000575
Tight End	0.0753826	0.2166622	0.1799926	0.0037476	0.1214006
Tight (TOL) Bar	0.0201043	0.0057303	0.0057418	0.0007851	0.0000454
Tight (TOL) Cra	0.0104721	0.0018977	0.0017908	0.0016002	0.0000428
Tight (TOL) End	0.0537809	0.0545321	0.0765671	0.0017907	0.0001074
Tight (MOL) Bar	0.0070553	0.0006113	0.0006754	0.0005257	0.0000421
Tight (MOL) Cra	0.0021931	0.0007993	0.0008802	0.0007314	0.0000102
Tight (MOL) End	0.0318293	0.0022781	0.0034020	0.0013759	0.0000730

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0191603	0.0026490	0.0026733	0.0015115	0.0000680
Loose Cra	0.0153925	0.0045076	0.0044910	0.0043236	0.0001301
Loose End	0.0547135	0.0033001	0.0042563	0.0018058	0.0001562
Loose (TOL) Bar	0.0148638	0.0028882	0.0028994	0.0014482	0.0001111
Loose (TOL) Cra	0.0124318	0.0042944	0.0042766	0.0041675	0.0001804
Loose (TOL) End	0.0324311	0.0062732	0.0066720	0.0027228	0.0000267
Loose (MOL) Bar	0.0106051	0.0021776	0.0021988	0.0013957	0.0001668
Loose (MOL) Cra	0.0034122	0.0011304	0.0011155	0.0009127	0.0000166
Loose (MOL) End	0.0180496	0.0037224	0.0038712	0.0023800	0.0004504
Medium Bar	0.0167687	0.0021414	0.0021517	0.0011353	0.0000183
Medium Cra	0.0137552	0.0035279	0.0035307	0.0034661	0.0000697
Medium End	0.0504095	0.0026225	0.0036132	0.0017332	0.0001532
Medium (TOL) Bar	0.0131162	0.0022988	0.0023013	0.0010504	0.0000467
Medium (TOL) Cra	0.0110720	0.0033192	0.0033084	0.0032565	0.0000849
Medium (TOL) End	0.0290620	0.0050333	0.0054402	0.0013137	0.0000748
Medium (MOL) Bar	0.0092326	0.0014437	0.0014507	0.0009671	0.0001048
Medium (MOL) Cra	0.0031680	0.0009245	0.0009236	0.0008792	0.0000149
Medium (MOL) End	0.0157357	0.0028932	0.0031174	0.0018598	0.0002898
Tight Bar	0.0101039	0.0012703	0.0012602	0.0005055	0.0000367
Tight Cra	0.0075538	0.0014625	0.0015592	0.0013587	0.0000350
Tight End	0.0366407	0.0026662	0.0030644	0.0014766	0.0001121
Tight (TOL) Bar	0.0082251	0.0014263	0.0014134	0.0006940	0.0000204
Tight (TOL) Cra	0.0063356	0.0013401	0.0013548	0.0012441	0.0000295
Tight (TOL) End	0.0200271	0.0043622	0.0042514	0.0010899	0.0000542
Tight (MOL) Bar	0.0057847	0.0007994	0.0008001	0.0006078	0.0000291
Tight (MOL) Cra	0.0019494	0.0007347	0.0007441	0.0006895	0.0000091
Tight (MOL) End	0.0099685	0.0037118	0.0029824	0.0025585	0.0007544

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0212045	0.0025055	0.0025321	0.0011739	0.0000624
Loose Cra	0.0149180	0.0050039	0.0050012	0.0048611	0.0008472
Loose End	0.0538287	0.0033391	0.0043558	0.0017914	0.0001553
Loose (TOL) Bar	0.0162979	0.0028187	0.0028275	0.0010279	0.0001117
Loose (TOL) Cra	0.0121636	0.0047193	0.0046914	0.0044776	0.0009337
Loose (TOL) End	0.0318925	0.0059353	0.0063201	0.0013766	0.0000773
Loose (MOL) Bar	0.0114575	0.0017935	0.0018250	0.0009174	0.0001953
Loose (MOL) Cra	0.0034731	0.0032899	0.0032878	0.0030779	0.0004076
Loose (MOL) End	0.0175430	0.0037101	0.0035110	0.0021401	0.0004857
Medium Bar	0.0183432	0.0019052	0.0019166	0.0006812	0.0000712
Medium Cra	0.0116890	0.0019645	0.0019436	0.0016912	0.0000470
Medium End	0.0495314	0.0031269	0.0040156	0.0017194	0.0001588
Medium (TOL) Bar	0.0142057	0.0023602	0.0023545	0.0010020	0.0000361
Medium (TOL) Cra	0.0092540	0.0018265	0.0017862	0.0015041	0.0000374
Medium (TOL) End	0.0289473	0.0052985	0.0056474	0.0013118	0.0000779
Medium (MOL) Bar	0.0098982	0.0011514	0.0011554	0.0008544	0.0000432
Medium (MOL) Cra	0.0026800	0.0008340	0.0008354	0.0008085	0.0000120
Medium (MOL) End	0.0154101	0.0028857	0.0027433	0.0016939	0.0003797
Tight Bar	0.0151088	0.0017277	0.0017366	0.0006182	0.0000583
Tight Cra	0.0092573	0.0018417	0.0018687	0.0015047	0.0000407
Tight End	0.0436780	0.0028225	0.0036141	0.0016141	0.0001382
Tight (TOL) Bar	0.0117336	0.0020259	0.0020266	0.0008479	0.0000305
Tight (TOL) Cra	0.0073085	0.0017540	0.0017644	0.0013364	0.0000323
Tight (TOL) End	0.0249304	0.0047884	0.0049801	0.0012170	0.0000673
Tight (MOL) Bar	0.0081002	0.0008200	0.0008268	0.0007038	0.0000290
Tight (MOL) Cra	0.0019495	0.0008159	0.0008244	0.0006895	0.0000092
Tight (MOL) End	0.0135036	0.0022213	0.0022471	0.0011006	0.0001651

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0195041	0.0022384	0.0023007	0.0013584	0.0002779
Loose Cra	0.0146273	0.0041989	0.0041976	0.0041295	0.0006529
Loose End	0.0508234	0.0033703	0.0044372	0.0017410	0.0001547
Loose (TOL) Bar	0.0150416	0.0024825	0.0025283	0.0012131	0.0003361
Loose (TOL) Cra	0.0118863	0.0039125	0.0038986	0.0038133	0.0007259
Loose (TOL) End	0.0301221	0.0056096	0.0060699	0.0013378	0.0000744
Loose (MOL) Bar	0.0105833	0.0015073	0.0015835	0.0010528	0.0004151
Loose (MOL) Cra	0.0038449	0.0025980	0.0025932	0.0025658	0.0002783
Loose (MOL) End	0.0165490	0.0038295	0.0036502	0.0025924	0.0005959
Medium Bar	0.0138828	0.0017249	0.0017551	0.0011452	0.0000351
Medium Cra	0.0124209	0.0049993	0.0050048	0.0017433	0.0000513
Medium End	0.0366783	0.0022655	0.0036402	0.0014774	0.0000908
Medium (TOL) Bar	0.0107095	0.0019268	0.0019469	0.0009899	0.0000624
Medium (TOL) Cra	0.0099848	0.0054028	0.0053921	0.0015623	0.0000406
Medium (TOL) End	0.0193004	0.0079949	0.0070555	0.0056118	0.0023222
Medium (MOL) Bar	0.0072227	0.0011002	0.0011269	0.0008550	0.0001767
Medium (MOL) Cra	0.0031672	0.0031722	0.0031542	0.0008790	0.0000141
Medium (MOL) End	0.0114602	0.0048140	0.0043552	0.0035074	0.0016784
Tight Bar	0.0088325	0.0009001	0.0009626	0.0005924	0.0000237
Tight Cra	0.0060891	0.0015168	0.0013530	0.0012193	0.0000256
Tight End	0.0196672	0.0147853	0.0154245	0.0010802	0.0000478
Tight (TOL) Bar	0.0067587	0.0011081	0.0011585	0.0004684	0.0000137
Tight (TOL) Cra	0.0043842	0.0013300	0.0011165	0.0010343	0.0000184
Tight (TOL) End	0.0121641	0.0123294	0.0133757	0.0008487	0.0000272
Tight (MOL) Bar	0.0045491	0.0005595	0.0006141	0.0004079	0.0000315
Tight (MOL) Cra	0.0012184	0.0005653	0.0005525	0.0005450	0.0000057
Tight (MOL) End	0.0070856	0.0066055	0.0067789	0.0006474	0.0000155

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0062877	0.0020421	0.0020670	0.0012518	0.0001049
Loose Cra	0.0047971	0.0037335	0.0037669	0.0037067	0.0002963
Loose End	0.0362170	0.0025388	0.0029534	0.0014676	0.0001008
Loose (TOL) Bar	0.0057818	0.0020702	0.0020959	0.0012449	0.0001075
Loose (TOL) Cra	0.0047980	0.0037348	0.0037682	0.0037081	0.0002954
Loose (TOL) End	0.0165944	0.0035725	0.0035620	0.0009915	0.0000387
Loose (MOL) Bar	0.0038002	0.0018588	0.0018753	0.0012195	0.0001260
Loose (MOL) Cra	0.0009748	0.0006234	0.0007204	0.0004875	0.0000047
Loose (MOL) End	0.0113457	0.0035326	0.0033795	0.0022093	0.0004377
Medium Bar	0.0052127	0.0015078	0.0015235	0.0008309	0.0000726
Medium Cra	0.0047010	0.0025971	0.0026664	0.0025469	0.0001498
Medium End	0.0346949	0.0019416	0.0027153	0.0014369	0.0001106
Medium (TOL) Bar	0.0048604	0.0015188	0.0015352	0.0008212	0.0000725
Medium (TOL) Cra	0.0047015	0.0025975	0.0026669	0.0025473	0.0001493
Medium (TOL) End	0.0157152	0.0029827	0.0031906	0.0009652	0.0000433
Medium (MOL) Bar	0.0030901	0.0012271	0.0012351	0.0007691	0.0001063
Medium (MOL) Cra	0.0009748	0.0005319	0.0006597	0.0004875	0.0000046
Medium (MOL) End	0.0107800	0.0026961	0.0026080	0.0016007	0.0001786
Tight Bar	0.0033991	0.0008566	0.0008697	0.0005155	0.0000014
Tight Cra	0.0026803	0.0009308	0.0011267	0.0008086	0.0000124
Tight End	0.0264219	0.0015907	0.0020820	0.0012530	0.0000860
Tight (TOL) Bar	0.0031683	0.0008522	0.0008653	0.0005003	0.0000028
Tight (TOL) Cra	0.0026803	0.0009308	0.0011267	0.0008086	0.0000124
Tight (TOL) End	0.0116411	0.0023845	0.0023231	0.0008304	0.0000344
Tight (MOL) Bar	0.0020405	0.0005888	0.0005993	0.0004261	0.0000233
Tight (MOL) Cra	0.0002437	0.0002494	0.0003487	0.0002437	0.0000011
Tight (MOL) End	0.0073592	0.0029634	0.0026821	0.0024063	0.0001822

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0071176	0.0017790	0.0018272	0.0007981	0.0001560
Loose Cra	0.0035078	0.0033180	0.0033705	0.0029976	0.0011005
Loose End	0.0357514	0.0025662	0.0030927	0.0014586	0.0001065
Loose (TOL) Bar	0.0065704	0.0018131	0.0018624	0.0007748	0.0001495
Loose (TOL) Cra	0.0035066	0.0033234	0.0033757	0.0030022	0.0011017
Loose (TOL) End	0.0164800	0.0035417	0.0035482	0.0009884	0.0000421
Loose (MOL) Bar	0.0042905	0.0014454	0.0014884	0.0006756	0.0001642
Loose (MOL) Cra	0.0003393	0.0019221	0.0019507	0.0018504	0.0003884
Loose (MOL) End	0.0113800	0.0032778	0.0028952	0.0016786	0.0002856
Medium Bar	0.0061703	0.0013180	0.0013420	0.0006568	0.0000211
Medium Cra	0.0036530	0.0010580	0.0011458	0.0009439	0.0000149
Medium End	0.0326241	0.0019108	0.0025637	0.0013936	0.0001019
Medium (TOL) Bar	0.0056658	0.0013588	0.0013835	0.0006310	0.0000222
Medium (TOL) Cra	0.0036530	0.0010580	0.0011458	0.0009439	0.0000149
Medium (TOL) End	0.0144731	0.0027570	0.0029452	0.0009262	0.0000385
Medium (MOL) Bar	0.0036039	0.0007932	0.0008157	0.0005237	0.0000455
Medium (MOL) Cra	0.0007309	0.0004552	0.0006096	0.0004221	0.0000033
Medium (MOL) End	0.0096659	0.0022587	0.0020048	0.0012519	0.0002911
Tight Bar	0.0050161	0.0010566	0.0010816	0.0004578	0.0000076
Tight Cra	0.0029236	0.0009847	0.0010276	0.0008445	0.0000131
Tight End	0.0292014	0.0017745	0.0023589	0.0013183	0.0000964
Tight (TOL) Bar	0.0045582	0.0010955	0.0011204	0.0004358	0.0000028
Tight (TOL) Cra	0.0029236	0.0009847	0.0010276	0.0008445	0.0000131
Tight (TOL) End	0.0128220	0.0025390	0.0025948	0.0008718	0.0000369
Tight (MOL) Bar	0.0028223	0.0004917	0.0005117	0.0003556	0.0000217
Tight (MOL) Cra	0.0004874	0.0003607	0.0004101	0.0003447	0.0000023
Tight (MOL) End	0.0087832	0.0015920	0.0016549	0.0007394	0.0000045

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0065681	0.0016283	0.0016923	0.0009903	0.0004286
Loose Cra	0.0034889	0.0027938	0.0028891	0.0026220	0.0008769
Loose End	0.0336850	0.0024022	0.0031320	0.0014157	0.0001023
Loose (TOL) Bar	0.0059348	0.0016501	0.0017162	0.0009599	0.0004327
Loose (TOL) Cra	0.0034896	0.0027936	0.0028890	0.0026220	0.0008762
Loose (TOL) End	0.0155341	0.0032904	0.0035429	0.0009595	0.0000389
Loose (MOL) Bar	0.0038382	0.0012448	0.0013107	0.0008366	0.0004403
Loose (MOL) Cra	0.0004292	0.0018479	0.0018804	0.0018017	0.0002984
Loose (MOL) End	0.0105570	0.0033131	0.0030360	0.0021160	0.0005783
Medium Bar	0.0049541	0.0011688	0.0012085	0.0007130	0.0000543
Medium Cra	0.0034093	0.0035339	0.0036145	0.0009118	0.0000137
Medium End	0.0259354	0.0018123	0.0027564	0.0012414	0.0000708
Medium (TOL) Bar	0.0044965	0.0012014	0.0012418	0.0006855	0.0000589
Medium (TOL) Cra	0.0034093	0.0035339	0.0036145	0.0009118	0.0000138
Medium (TOL) End	0.0125796	0.0024353	0.0028888	0.0008632	0.0000302
Medium (MOL) Bar	0.0027827	0.0007609	0.0007948	0.0005824	0.0001116
Medium (MOL) Cra	0.0004872	0.0006253	0.0006279	0.0003446	0.0000022
Medium (MOL) End	0.0078919	0.0034708	0.0031360	0.0026470	0.0008278
Tight Bar	0.0029217	0.0005547	0.0006154	0.0003104	0.0000022
Tight Cra	0.0012179	0.0006600	0.0008436	0.0005448	0.0000052
Tight End	0.0142367	0.0115247	0.0115323	0.0009186	0.0000377
Tight (TOL) Bar	0.0026432	0.0005920	0.0006511	0.0002950	0.0000005
Tight (TOL) Cra	0.0012179	0.0006600	0.0008436	0.0005448	0.0000052
Tight (TOL) End	0.0076779	0.0078029	0.0079960	0.0006740	0.0000187
Tight (MOL) Bar	0.0015835	0.0003231	0.0003756	0.0002418	0.0000273
Tight (MOL) Cra	0.0002437	0.0003472	0.0003710	0.0002437	0.0000011
Tight (MOL) End	0.0050787	0.0047473	0.0048424	0.0005480	0.0000119

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0151830	0.0031178	0.0031499	0.0014792	0.0002701
Loose Cra	0.0100327	0.0042651	0.0043142	0.0042050	0.0001540
Loose End	0.0468906	0.0032793	0.0037737	0.0016692	0.0001104
Loose (TOL) Bar	0.0144372	0.0030854	0.0031182	0.0014677	0.0002860
Loose (TOL) Cra	0.0097856	0.0042596	0.0043136	0.0041893	0.0001586
Loose (TOL) End	0.0286922	0.0051034	0.0053237	0.0026939	0.0001772
Loose (MOL) Bar	0.0084478	0.0024423	0.0024755	0.0013958	0.0002603
Loose (MOL) Cra	0.0031651	0.0040534	0.0040844	0.0039826	0.0002305
Loose (MOL) End	0.0146741	0.0033492	0.0034754	0.0023639	0.0005854
Medium Bar	0.0095322	0.0020438	0.0020617	0.0009748	0.0001323
Medium Cra	0.0065792	0.0012922	0.0013660	0.0012678	0.0000306
Medium End	0.0345675	0.0019888	0.0025551	0.0014334	0.0001010
Medium (TOL) Bar	0.0089710	0.0020412	0.0020601	0.0009611	0.0001398
Medium (TOL) Cra	0.0063355	0.0012738	0.0013653	0.0012441	0.0000295
Medium (TOL) End	0.0194358	0.0030882	0.0034151	0.0010735	0.0000521
Medium (MOL) Bar	0.0047601	0.0013807	0.0014061	0.0008619	0.0001476
Medium (MOL) Cra	0.0009747	0.0004880	0.0004977	0.0004875	0.0000046
Medium (MOL) End	0.0105249	0.0020332	0.0024179	0.0016889	0.0000213
Tight Bar	0.0051162	0.0011250	0.0011287	0.0005604	0.0000071
Tight Cra	0.0029241	0.0008865	0.0012481	0.0008446	0.0000136
Tight End	0.0159537	0.0015877	0.0014103	0.0009726	0.0000461
Tight (TOL) Bar	0.0048599	0.0011208	0.0011253	0.0005497	0.0000025
Tight (TOL) Cra	0.0026804	0.0008618	0.0012658	0.0008086	0.0000125
Tight (TOL) End	0.0088621	0.0020188	0.0016852	0.0007243	0.0000246
Tight (MOL) Bar	0.0026926	0.0005932	0.0006185	0.0004494	0.0000003
Tight (MOL) Cra	0.0002437	0.0002798	0.0003710	0.0002437	0.0000011
Tight (MOL) End	0.0046076	0.0011265	0.0008777	0.0005220	0.0000121

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0162575	0.0028774	0.0029230	0.0010766	0.0003786
Loose Cra	0.0097489	0.0017014	0.0017470	0.0015444	0.0000472
Loose End	0.0436001	0.0042397	0.0045310	0.0034705	0.0002342
Loose (TOL) Bar	0.0153980	0.0028342	0.0028822	0.0010383	0.0003823
Loose (TOL) Cra	0.0095051	0.0016717	0.0017300	0.0015249	0.0000460
Loose (TOL) End	0.0260692	0.0049573	0.0049945	0.0027382	0.0006792
Loose (MOL) Bar	0.0090467	0.0019992	0.0020786	0.0008940	0.0003662
Loose (MOL) Cra	0.0034117	0.0009823	0.0010019	0.0009124	0.0000161
Loose (MOL) End	0.0136044	0.0033263	0.0030922	0.0020220	0.0008303
Medium Bar	0.0119731	0.0020745	0.0020886	0.0008545	0.0000824
Medium Cra	0.0056042	0.0012922	0.0014407	0.0011699	0.0000257
Medium End	0.0252153	0.0028822	0.0029565	0.0024570	0.0002369
Medium (TOL) Bar	0.0114848	0.0020977	0.0021130	0.0008388	0.0000924
Medium (TOL) Cra	0.0056042	0.0012922	0.0014407	0.0011699	0.0000257
Medium (TOL) End	0.0156656	0.0032485	0.0031997	0.0018712	0.0004777
Medium (MOL) Bar	0.0068189	0.0011760	0.0012020	0.0007105	0.0000772
Medium (MOL) Cra	0.0019493	0.0007319	0.0008769	0.0006894	0.0000089
Medium (MOL) End	0.0084390	0.0019069	0.0020800	0.0013358	0.0007521
Tight Bar	0.0089810	0.0016600	0.0016709	0.0005371	0.0000040
Tight Cra	0.0041428	0.0011630	0.0012858	0.0010057	0.0000196
Tight End	0.0134106	0.0013987	0.0016099	0.0008915	0.0000364
Tight (TOL) Bar	0.0086737	0.0016571	0.0016685	0.0005290	0.0000092
Tight (TOL) Cra	0.0041428	0.0011630	0.0012858	0.0010057	0.0000196
Tight (TOL) End	0.0091566	0.0018150	0.0019210	0.0007363	0.0000245
Tight (MOL) Bar	0.0050471	0.0007400	0.0007535	0.0004542	0.0000117
Tight (MOL) Cra	0.0009747	0.0005318	0.0005408	0.0004875	0.0000046
Tight (MOL) End	0.0057296	0.0010069	0.0013625	0.0005822	0.0000146

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0144035	0.0025219	0.0025863	0.0012534	0.0004708
Loose Cra	0.0072065	0.0013761	0.0014248	0.0013365	0.0000697
Loose End	0.0321392	0.0059297	0.0060155	0.0051843	0.0007365
Loose (TOL) Bar	0.0135538	0.0025154	0.0025828	0.0012250	0.0004899
Loose (TOL) Cra	0.0069565	0.0014011	0.0014271	0.0013140	0.0000772
Loose (TOL) End	0.0178933	0.0055108	0.0053202	0.0038569	0.0012548
Loose (MOL) Bar	0.0079941	0.0016250	0.0017195	0.0010016	0.0004120
Loose (MOL) Cra	0.0017815	0.0021626	0.0021665	0.0021401	0.0001589
Loose (MOL) End	0.0099494	0.0036442	0.0035633	0.0026228	0.0014805
Medium Bar	0.0095313	0.0017249	0.0017607	0.0009475	0.0001080
Medium Cra	0.0053605	0.0020729	0.0020944	0.0011440	0.0000245
Medium End	0.0177581	0.0058062	0.0057948	0.0051735	0.0013310
Medium (TOL) Bar	0.0088797	0.0017186	0.0017562	0.0009200	0.0001304
Medium (TOL) Cra	0.0053605	0.0020728	0.0020943	0.0011440	0.0000245
Medium (TOL) End	0.0092287	0.0049582	0.0046670	0.0037618	0.0016121
Medium (MOL) Bar	0.0053469	0.0010229	0.0010593	0.0007456	0.0001146
Medium (MOL) Cra	0.0014619	0.0015829	0.0015791	0.0005970	0.0000066
Medium (MOL) End	0.0053613	0.0038162	0.0035132	0.0027621	0.0017087
Tight Bar	0.0056983	0.0009825	0.0010223	0.0004313	0.0000148
Tight Cra	0.0019490	0.0009279	0.0007921	0.0006894	0.0000087
Tight End	0.0112227	0.0033391	0.0034780	0.0008153	0.0000284
Tight (TOL) Bar	0.0052151	0.0009798	0.0010216	0.0004165	0.0000199
Tight (TOL) Cra	0.0019490	0.0009279	0.0007921	0.0006894	0.0000087
Tight (TOL) End	0.0060247	0.0032915	0.0034143	0.0005970	0.0000152
Tight (MOL) Bar	0.0028899	0.0004974	0.0005382	0.0003373	0.0000296
Tight (MOL) Cra	0.0004873	0.0004008	0.0003548	0.0003446	0.0000022
Tight (MOL) End	0.0040165	0.0025752	0.0027869	0.0004873	0.0000101

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0047962	0.0023340	0.0023574	0.0013065	0.0002877
Loose Cra	0.0003760	0.0036874	0.0036605	0.0036023	0.0003516
Loose End	0.0080561	0.0027597	0.0027448	0.0021867	0.0005458
Loose (TOL) Bar	0.0045089	0.0023115	0.0023355	0.0013012	0.0002982
Loose (TOL) Cra	0.0003760	0.0036874	0.0036605	0.0036023	0.0003516
Loose (TOL) End	0.0058813	0.0027452	0.0027156	0.0021145	0.0006585
Loose (MOL) Bar	0.0033265	0.0023653	0.0023843	0.0013131	0.0002725
Loose (MOL) Cra	0.0001171	0.0037196	0.0036938	0.0036384	0.0003679
Loose (MOL) End	0.0038116	0.0026608	0.0025606	0.0020913	0.0005483
Medium Bar	0.0028966	0.0014458	0.0014575	0.0007968	0.0001739
Medium Cra	0.0004873	0.0004457	0.0004367	0.0003446	0.0000023
Medium End	0.0058906	0.0017329	0.0017268	0.0015045	0.0000600
Medium (TOL) Bar	0.0027172	0.0014326	0.0014448	0.0007902	0.0001772
Medium (TOL) Cra	0.0004873	0.0004457	0.0004367	0.0003446	0.0000023
Medium (TOL) End	0.0039326	0.0016821	0.0016642	0.0013931	0.0001916
Medium (MOL) Bar	0.0019122	0.0014208	0.0014281	0.0007799	0.0001768
Medium (MOL) Cra	0.0002437	0.0002541	0.0002501	0.0002437	0.0000011
Medium (MOL) End	0.0027660	0.0016247	0.0015559	0.0013879	0.0000620
Tight Bar	0.0013999	0.0006224	0.0006284	0.0003974	0.0000346
Tight Cra	0.0002437	0.0003520	0.0003492	0.0002437	0.0000011
Tight End	0.0027175	0.0007815	0.0005827	0.0004008	0.0000073
Tight (TOL) Bar	0.0013231	0.0006220	0.0006283	0.0003910	0.0000360
Tight (TOL) Cra	0.0002437	0.0003520	0.0003492	0.0002437	0.0000011
Tight (TOL) End	0.0018904	0.0006974	0.0005486	0.0003342	0.0000050
Tight (MOL) Bar	0.0009953	0.0006011	0.0006096	0.0003813	0.0000366
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0013587	0.0005511	0.0003906	0.0002834	0.0000036

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0049598	0.0018968	0.0019408	0.0007600	0.0005016
Loose Cra	0.0000000	0.0004851	0.0004851	0.0000000	0.0004851
Loose End	0.0069425	0.0019602	0.0018799	0.0015337	0.0003633
Loose (TOL) Bar	0.0047117	0.0018621	0.0019076	0.0007356	0.0004981
Loose (TOL) Cra	0.0000000	0.0004851	0.0004851	0.0000000	0.0004851
Loose (TOL) End	0.0054234	0.0018283	0.0017799	0.0013730	0.0004683
Loose (MOL) Bar	0.0033194	0.0018878	0.0019281	0.0007070	0.0005061
Loose (MOL) Cra	0.0000000	0.0002425	0.0002425	0.0000000	0.0002425
Loose (MOL) End	0.0033914	0.0019594	0.0016102	0.0012699	0.0003793
Medium Bar	0.0034392	0.0010205	0.0010479	0.0005683	0.0001347
Medium Cra	0.0002436	0.0003520	0.0003492	0.0002436	0.0000011
Medium End	0.0024299	0.0012561	0.0010904	0.0008391	0.0003981
Medium (TOL) Bar	0.0032844	0.0010298	0.0010578	0.0005586	0.0001385
Medium (TOL) Cra	0.0002436	0.0003520	0.0003492	0.0002436	0.0000011
Medium (TOL) End	0.0021187	0.0011213	0.0009625	0.0007277	0.0003558
Medium (MOL) Bar	0.0024610	0.0010182	0.0010374	0.0005219	0.0001313
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0013881	0.0010577	0.0008825	0.0006586	0.0003794
Tight Bar	0.0021580	0.0006573	0.0006663	0.0003502	0.0000568
Tight Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight End	0.0014054	0.0005616	0.0004510	0.0003064	0.0000086
Tight (TOL) Bar	0.0020807	0.0006578	0.0006669	0.0003454	0.0000585
Tight (TOL) Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight (TOL) End	0.0012244	0.0005538	0.0004546	0.0002926	0.0000128
Tight (MOL) Bar	0.0015295	0.0006215	0.0006250	0.0003150	0.0000561
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0009313	0.0005045	0.0003740	0.0002459	0.0000114

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0046206	0.0016499	0.0016970	0.0009294	0.0005389
Loose Cra	0.0001930	0.0017788	0.0017781	0.0017326	0.0002921
Loose End	0.0045498	0.0024849	0.0024271	0.0020275	0.0006939
Loose (TOL) Bar	0.0043062	0.0016093	0.0016588	0.0009098	0.0005512
Loose (TOL) Cra	0.0001930	0.0017788	0.0017781	0.0017326	0.0002921
Loose (TOL) End	0.0034883	0.0021511	0.0020599	0.0016902	0.0006949
Loose (MOL) Bar	0.0030652	0.0015736	0.0016271	0.0008433	0.0005087
Loose (MOL) Cra	0.0000000	0.0002425	0.0002425	0.0000000	0.0002425
Loose (MOL) End	0.0022412	0.0024068	0.0022180	0.0018021	0.0008814
Medium Bar	0.0028624	0.0008947	0.0009113	0.0005849	0.0001578
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0014400	0.0027444	0.0025583	0.0019697	0.0012112
Medium (TOL) Bar	0.0026779	0.0008933	0.0009105	0.0005705	0.0001661
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0011813	0.0021505	0.0019904	0.0015252	0.0009986
Medium (MOL) Bar	0.0020052	0.0008524	0.0008622	0.0005372	0.0001340
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0005406	0.0020373	0.0018586	0.0013450	0.0011091
Tight Bar	0.0017141	0.0003692	0.0004087	0.0002678	0.0000477
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0015949	0.0005854	0.0005166	0.0003070	0.0000042
Tight (TOL) Bar	0.0016376	0.0003681	0.0004081	0.0002628	0.0000487
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0014177	0.0005788	0.0005215	0.0002894	0.0000037
Tight (MOL) Bar	0.0011672	0.0003533	0.0003750	0.0002259	0.0000409
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0010633	0.0005199	0.0004470	0.0002506	0.0000028

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0025529	0.0020381	0.0020618	0.0012898	0.0002659
Loose Cra	0.0005622	0.0031278	0.0031231	0.0030993	0.0001654
Loose End	0.0015511	0.0022256	0.0022201	0.0018573	0.0006877
Loose (TOL) Bar	0.0023947	0.0020042	0.0020283	0.0012852	0.0002731
Loose (TOL) Cra	0.0005622	0.0031278	0.0031231	0.0030993	0.0001654
Loose (TOL) End	0.0012365	0.0022040	0.0021954	0.0018407	0.0007077
Loose (MOL) Bar	0.0018550	0.0020737	0.0020904	0.0012972	0.0002591
Loose (MOL) Cra	0.0003140	0.0031922	0.0031869	0.0031686	0.0001711
Loose (MOL) End	0.0007537	0.0020958	0.0020688	0.0018392	0.0005425
Medium Bar	0.0013666	0.0011931	0.0012001	0.0007608	0.0001938
Medium Cra	0.0004873	0.0004457	0.0004367	0.0003446	0.0000023
Medium End	0.0015358	0.0012029	0.0012044	0.0010852	0.0002317
Medium (TOL) Bar	0.0012882	0.0011760	0.0011833	0.0007570	0.0001967
Medium (TOL) Cra	0.0004873	0.0004457	0.0004367	0.0003446	0.0000023
Medium (TOL) End	0.0012266	0.0011913	0.0011916	0.0010609	0.0002464
Medium (MOL) Bar	0.0008749	0.0011979	0.0012007	0.0007480	0.0002073
Medium (MOL) Cra	0.0002437	0.0002541	0.0002501	0.0002437	0.0000011
Medium (MOL) End	0.0007204	0.0011022	0.0010944	0.0010429	0.0001633
Tight Bar	0.0006350	0.0004717	0.0004747	0.0003437	0.0000445
Tight Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight End	0.0006498	0.0004401	0.0004325	0.0001959	0.0000017
Tight (TOL) Bar	0.0005830	0.0004700	0.0004731	0.0003379	0.0000462
Tight (TOL) Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight (TOL) End	0.0004726	0.0003896	0.0003851	0.0001671	0.0000012
Tight (MOL) Bar	0.0004319	0.0004657	0.0004692	0.0003216	0.0000463
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002954	0.0003966	0.0003282	0.0001321	0.0000008

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

Selection	fake rate	total(+)	total (-)	stat	bkg
Loose Bar	0.0026329	0.0015504	0.0015976	0.0006832	0.0004124
Loose Cra	0.0004874	0.0006518	0.0006457	0.0003446	0.0000023
Loose End	0.0015678	0.0013135	0.0013193	0.0010308	0.0004943
Loose (TOL) Bar	0.0024804	0.0015005	0.0015497	0.0006603	0.0004140
Loose (TOL) Cra	0.0004874	0.0006518	0.0006457	0.0003446	0.0000023
Loose (TOL) End	0.0013809	0.0012637	0.0012759	0.0009975	0.0005045
Loose (MOL) Bar	0.0019202	0.0015413	0.0015836	0.0006451	0.0004204
Loose (MOL) Cra	0.0002437	0.0003480	0.0003451	0.0002437	0.0000011
Loose (MOL) End	0.0009372	0.0013153	0.0013067	0.0011219	0.0003590
Medium Bar	0.0014805	0.0007079	0.0007342	0.0004705	0.0001302
Medium Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Medium End	0.0005550	0.0008539	0.0008239	0.0006617	0.0002699
Medium (TOL) Bar	0.0014267	0.0007057	0.0007326	0.0004648	0.0001337
Medium (TOL) Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Medium (TOL) End	0.0005009	0.0007910	0.0007621	0.0006304	0.0002650
Medium (MOL) Bar	0.0011570	0.0007190	0.0007327	0.0004390	0.0001265
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0002500	0.0007464	0.0007281	0.0005764	0.0002803
Tight Bar	0.0008473	0.0003754	0.0003793	0.0002966	0.0000839
Tight Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight End	0.0002954	0.0003211	0.0002795	0.0001321	0.0000008
Tight (TOL) Bar	0.0007945	0.0003719	0.0003759	0.0002901	0.0000864
Tight (TOL) Cra	0.0002437	0.0003521	0.0003492	0.0002437	0.0000011
Tight (TOL) End	0.0002363	0.0003167	0.0002776	0.0001181	0.0000006
Tight (MOL) Bar	0.0005766	0.0003687	0.0003689	0.0002561	0.0000778
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0001772	0.0002619	0.0002171	0.0001023	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	0.0024081	0.0013630	0.0014241	0.0008466	0.0005114
Loose Cra	0.0004874	0.0004885	0.0004515	0.0003447	0.0000023
Loose End	0.0003208	0.0021644	0.0019975	0.0013688	0.0010932
Loose (TOL) Bar	0.0022426	0.0013119	0.0013760	0.0008309	0.0005258
Loose (TOL) Cra	0.0004874	0.0004885	0.0004515	0.0003447	0.0000023
Loose (TOL) End	0.0002758	0.0020967	0.0019339	0.0013310	0.0010793
Loose (MOL) Bar	0.0016893	0.0012997	0.0013646	0.0007833	0.0005004
Loose (MOL) Cra	0.0002437	0.0003472	0.0002798	0.0002437	0.0000011
Loose (MOL) End	0.0000411	0.0017910	0.0016772	0.0011201	0.0010194
Medium Bar	0.0015587	0.0007573	0.0007757	0.0005375	0.0001527
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	0.0007582	0.0006217	0.0000000	0.0005303
Medium (TOL) Bar	0.0015038	0.0007556	0.0007742	0.0005309	0.0001572
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	0.0006388	0.0005231	0.0000000	0.0004713
Medium (MOL) Bar	0.0012190	0.0007635	0.0007723	0.0005081	0.0001400
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	0.0004913	0.0004179	0.0000000	0.0004124
Tight Bar	0.0008676	0.0002992	0.0003348	0.0002366	0.0000637
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	0.0003544	0.0003676	0.0003299	0.0001447	0.0000009
Tight (TOL) Bar	0.0008681	0.0002993	0.0003349	0.0002365	0.0000631
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	0.0002954	0.0003643	0.0003296	0.0001321	0.0000008
Tight (MOL) Bar	0.0006810	0.0002971	0.0003116	0.0002115	0.0000488
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	0.0002363	0.0003166	0.0002800	0.0001181	0.0000006