

Table 1: Scale Factors for Cut-Based τ ID

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.0031000	0.0101833	0.0044338	0.0091724	0.0087627
Loose Cra	0.9923532	0.0152905	0.0131943	0.0059215	0.0077382
Loose End	0.9933278	0.0113181	0.0055205	0.0088883	0.0098846
Loose (TOL) Bar	0.9177435	0.1535815	0.0120711	0.1530076	0.1531068
Loose (TOL) Cra	0.7283610	0.0810925	0.0420853	0.0693179	0.0638298
Loose (TOL) End	0.9438461	0.0915161	0.0166018	0.0817284	0.0899983
Loose (MOL) Bar	1.4538957	0.0374352	0.0290433	0.0201835	0.0236214
Loose (MOL) Cra	1.1784074	0.1919888	0.1327154	0.1387314	0.1316475
Loose (MOL) End	1.2684848	0.1139986	0.0365401	0.0801751	0.1079847
Medium Bar	1.0026953	0.0116447	0.0056595	0.0101788	0.0099206
Medium Cra	0.9852111	0.0204230	0.0179464	0.0097524	0.0076708
Medium End	0.9934640	0.0138347	0.0073305	0.0117360	0.0111968
Medium (TOL) Bar	0.9031923	0.1569691	0.0130108	0.1564278	0.1564293
Medium (TOL) Cra	0.6975828	0.0769798	0.0372593	0.0673629	0.0593632
Medium (TOL) End	0.9365775	0.1048255	0.0184611	0.0954428	0.1031873
Medium (MOL) Bar	1.4550310	0.0415042	0.0321152	0.0262934	0.0251541
Medium (MOL) Cra	1.1493601	0.1502507	0.1082448	0.1042039	0.1001025
Medium (MOL) End	1.3088852	0.1259448	0.0413776	0.0800260	0.1189540
Tight Bar	0.9931085	0.0157066	0.0086667	0.0131005	0.0127222
Tight Cra	0.9433140	0.0325775	0.0295676	0.0136814	0.0121641
Tight End	0.9603329	0.0248052	0.0103480	0.0225461	0.0160995
Tight (TOL) Bar	0.8913691	0.1730089	0.0162029	0.1721756	0.1722487
Tight (TOL) Cra	0.5572460	0.1183068	0.0706825	0.0948710	0.0897411
Tight (TOL) End	0.8868050	0.1243289	0.0507244	0.1100390	0.1135114
Tight (MOL) Bar	1.4798150	0.0581317	0.0417524	0.0404496	0.0378730
Tight (MOL) Cra	0.9092443	0.2800303	0.1698726	0.2226216	0.2226068
Tight (MOL) End	1.2499572	0.1320083	0.0465259	0.0983010	0.1235382

Table 2: Scale Factors for LLH-Based τ ID

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.9953906	0.0087464	0.0039447	0.0078115	0.0074767
Loose Cra	1.0069199	0.0152970	0.0139907	0.0061739	0.0061932
Loose End	0.9919998	0.0110000	0.0057275	0.0092224	0.0093942
Loose (TOL) Bar	0.9167320	0.1483226	0.0117170	0.1477162	0.1478596
Loose (TOL) Cra	0.7213680	0.1117304	0.0849386	0.0725899	0.0641593
Loose (TOL) End	0.9425638	0.0994851	0.0371135	0.0857069	0.0923038
Loose (MOL) Bar	1.4443295	0.0376908	0.0276004	0.0193740	0.0256700
Loose (MOL) Cra	1.1572798	0.2568945	0.2269504	0.1203678	0.1096054
Loose (MOL) End	1.2735713	0.1165885	0.0362389	0.0812111	0.1108139
Medium Bar	0.9887332	0.0101882	0.0046744	0.0090597	0.0084768
Medium Cra	1.0173790	0.0217853	0.0183985	0.0088816	0.0116662
Medium End	0.9825831	0.0133416	0.0068552	0.0114506	0.0105460
Medium (TOL) Bar	0.9074410	0.1546010	0.0121181	0.1540641	0.1541256
Medium (TOL) Cra	0.7229604	0.0586284	0.0345756	0.0473490	0.0435311
Medium (TOL) End	0.9224084	0.1031309	0.0529362	0.0885091	0.0877194
Medium (MOL) Bar	1.4479897	0.0391854	0.0290830	0.0238112	0.0262635
Medium (MOL) Cra	1.2041225	0.1256562	0.0992199	0.0771043	0.0725028
Medium (MOL) End	1.2509180	0.1153923	0.0374423	0.0783866	0.1091494
Tight Bar	0.9798838	0.0111848	0.0056953	0.0096298	0.0086451
Tight Cra	1.0292896	0.0326741	0.0253414	0.0099442	0.0206287
Tight End	0.9721154	0.0174327	0.0082468	0.0153601	0.0134267
Tight (TOL) Bar	0.8922280	0.1572822	0.0127734	0.1566874	0.1567630
Tight (TOL) Cra	0.7060903	0.0619338	0.0403130	0.0470190	0.0462350
Tight (TOL) End	0.5410315	0.7947913	0.4555053	0.6513128	0.5205946
Tight (MOL) Bar	1.4201682	0.0401721	0.0311060	0.0254240	0.0242570
Tight (MOL) Cra	1.2224240	0.1257175	0.1179532	0.0428771	0.0434979
Tight (MOL) End	1.2190916	0.1236551	0.0391050	0.0742434	0.1173092

Table 3: Scale Factors for BDT-Based τ ID

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.0005512	0.0088317	0.0051682	0.0071689	0.0069794
Loose Cra	0.9929881	0.0167062	0.0150841	0.0071845	0.0068274
Loose End	1.0026994	0.0121326	0.0073815	0.0094601	0.0096364
Loose (TOL) Bar	0.9238443	0.1444261	0.0124538	0.1435076	0.1438886
Loose (TOL) Cra	0.7114099	0.0988837	0.0581645	0.0799683	0.0713269
Loose (TOL) End	0.9512998	0.1029441	0.0466465	0.0857628	0.0917700
Loose (MOL) Bar	1.4449921	0.0385901	0.0290592	0.0158597	0.0253939
Loose (MOL) Cra	1.1711377	0.2070041	0.1615008	0.1294924	0.1273345
Loose (MOL) End	1.2926076	0.1210921	0.0384189	0.0769847	0.1148363
Medium Bar	1.0345468	0.0112116	0.0083636	0.0065686	0.0074703
Medium Cra	1.0105394	0.0239645	0.0206679	0.0121360	0.0108197
Medium End	1.0625019	0.0220249	0.0127293	0.0179766	0.0114731
Medium (TOL) Bar	0.9629788	0.1363565	0.0155732	0.1347514	0.1354645
Medium (TOL) Cra	0.7292057	0.0741950	0.0366395	0.0645179	0.0568256
Medium (TOL) End	1.0245661	0.0841665	0.0230774	0.0743918	0.0809416
Medium (MOL) Bar	1.4641182	0.0470393	0.0349862	0.0173286	0.0314440
Medium (MOL) Cra	1.2558639	0.1456118	0.1076511	0.0980520	0.0934398
Medium (MOL) End	1.3920054	0.1468645	0.0488925	0.0875545	0.1384878
Tight Bar	1.0913432	0.0177623	0.0126316	0.0109736	0.0124916
Tight Cra	1.0500753	0.0365075	0.0306681	0.0198073	0.0140074
Tight End	1.1372515	0.0244499	0.0191023	0.0152648	0.0073416
Tight (TOL) Bar	1.0149942	0.1364280	0.0209374	0.1344314	0.1348123
Tight (TOL) Cra	0.7663713	0.0905301	0.0467381	0.0775326	0.0656727
Tight (TOL) End	1.0700025	0.0845919	0.0318885	0.0745329	0.0783518
Tight (MOL) Bar	1.5227325	0.0600757	0.0462558	0.0238592	0.0383356
Tight (MOL) Cra	1.3860662	0.2038330	0.1405362	0.1476399	0.1265805
Tight (MOL) End	1.4792260	0.1617309	0.0670745	0.1064144	0.1471668

Table 4: Scale Factors for Cut-Based τ ID + Loose Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.6265356	0.0852367	0.0156566	0.0837869	0.0836439
Loose Cra	0.3717125	0.0476613	0.0430573	0.0204398	0.0202873
Loose End	1.0102544	0.0269091	0.0128676	0.0135200	0.0236361
Loose (TOL) Bar	0.5855054	0.1012220	0.0166003	0.0998522	0.0996110
Loose (TOL) Cra	0.3553169	0.0468444	0.0448373	0.0135706	0.0109332
Loose (TOL) End	0.9612273	0.1375994	0.0279875	0.1193074	0.1347231
Loose (MOL) Bar	0.9722578	0.1276322	0.1246431	0.0274611	0.0218686
Loose (MOL) Cra	0.8386055	0.2501651	0.2372752	0.0790306	0.0792665
Loose (MOL) End	1.4040548	0.1261372	0.0551318	0.0407936	0.1134511
Medium Bar	0.6273472	0.0847962	0.0163959	0.0831966	0.0829441
Medium Cra	0.3712192	0.0454675	0.0452447	0.0045107	0.0044520
Medium End	1.0122907	0.0259326	0.0132238	0.0155470	0.0223108
Medium (TOL) Bar	0.5871075	0.0999734	0.0173190	0.0984622	0.0981612
Medium (TOL) Cra	0.3531198	0.0482825	0.0469096	0.0114347	0.0096970
Medium (TOL) End	0.9605104	0.1449641	0.0287249	0.1254218	0.1420898
Medium (MOL) Bar	0.9905791	0.1045667	0.1019550	0.0232252	0.0042008
Medium (MOL) Cra	0.8142863	0.2790584	0.2508586	0.1043503	0.1222444
Medium (MOL) End	1.4227653	0.1380362	0.0575457	0.0393477	0.1254694
Tight Bar	0.6365014	0.0916956	0.0198092	0.0895308	0.0891177
Tight Cra	0.3402941	0.0579758	0.0565538	0.0053461	0.0127668
Tight End	0.9830870	0.0295008	0.0150831	0.0136701	0.0253555
Tight (TOL) Bar	0.5975263	0.1066705	0.0208143	0.1046203	0.1040164
Tight (TOL) Cra	0.3128590	0.0578964	0.0576922	0.0048701	0.0031682
Tight (TOL) End	0.9068691	0.1466263	0.0309970	0.1313705	0.1433129
Tight (MOL) Bar	1.0551887	0.0831017	0.0722275	0.0410997	0.0240207
Tight (MOL) Cra	0.9084321	0.3936661	0.3811582	0.0680487	0.0984458
Tight (MOL) End	1.3396112	0.1467136	0.0624099	0.0813232	0.1327781

Table 5: Scale Factors for LLH-Based τ ID + Loose Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.6305018	0.0800774	0.0151908	0.0786243	0.0785326
Loose Cra	0.3607657	0.0432527	0.0422301	0.0093378	0.0093563
Loose End	1.0100169	0.0253554	0.0127767	0.0143693	0.0219043
Loose (TOL) Bar	0.5930039	0.1007104	0.0162602	0.0993899	0.0991870
Loose (TOL) Cra	0.3413694	0.0508753	0.0439777	0.0255793	0.0251448
Loose (TOL) End	0.9581691	0.1376422	0.0278173	0.1187041	0.1348024
Loose (MOL) Bar	0.9871816	0.1105020	0.1066424	0.0289508	0.0257452
Loose (MOL) Cra	0.7561854	1.4966122	1.3855182	0.5627438	0.5658513
Loose (MOL) End	1.4131975	0.1335084	0.0551559	0.0424780	0.1215829
Medium Bar	0.6279463	0.0847502	0.0156493	0.0832929	0.0830874
Medium Cra	0.3554007	0.0464284	0.0452623	0.0076032	0.0103471
Medium End	1.0022671	0.0243289	0.0133252	0.0146431	0.0203570
Medium (TOL) Bar	0.5910617	0.1056849	0.0166929	0.1043588	0.1040649
Medium (TOL) Cra	0.3313781	0.0474478	0.0464181	0.0095288	0.0098362
Medium (TOL) End	0.9423274	0.1387076	0.0283228	0.1204511	0.1357856
Medium (MOL) Bar	1.0021760	0.0580525	0.0528454	0.0240331	0.0137842
Medium (MOL) Cra	0.7526987	0.3156951	0.2553740	0.1263030	0.1856009
Medium (MOL) End	1.3798552	0.1371575	0.0561404	0.0439369	0.1251420
Tight Bar	0.6213581	0.0856218	0.0163704	0.0840433	0.0837995
Tight Cra	0.3459136	0.0539305	0.0510029	0.0161881	0.0175301
Tight End	0.9931386	0.0269962	0.0140856	0.0158134	0.0230316
Tight (TOL) Bar	0.5835424	0.1026377	0.0173600	0.1011595	0.1008779
Tight (TOL) Cra	0.3216431	0.0526269	0.0520201	0.0076140	0.0079750
Tight (TOL) End	0.6128664	0.8520098	0.6213297	0.5829840	0.4694893
Tight (MOL) Bar	0.9919500	0.0631775	0.0567497	0.0277654	0.0170875
Tight (MOL) Cra	0.6318287	0.2864508	0.2623657	0.1037917	0.1149715
Tight (MOL) End	1.3833491	0.1494372	0.0591012	0.0462924	0.1372540

Table 6: Scale Factors for BDT-Based τ ID + Loose Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.6367053	0.0855336	0.0320170	0.0793162	0.0792877
Loose Cra	0.3659049	0.0440715	0.0430179	0.0095845	0.0089640
Loose End	1.0272120	0.0268626	0.0141045	0.0135477	0.0228637
Loose (TOL) Bar	0.6016276	0.1084891	0.0361136	0.1023027	0.1021955
Loose (TOL) Cra	0.3466770	0.0457897	0.0446292	0.0102473	0.0052709
Loose (TOL) End	0.9832072	0.1370543	0.0296583	0.1159480	0.1338073
Loose (MOL) Bar	1.0030596	0.1226910	0.1207153	0.0187328	0.0219328
Loose (MOL) Cra	0.7702477	0.4891255	0.4843002	0.0622281	0.0685368
Loose (MOL) End	1.4392853	0.1376709	0.0581873	0.0408214	0.1247704
Medium Bar	0.6470169	0.0726147	0.0205163	0.0692972	0.0696568
Medium Cra	0.3646055	0.0520768	0.0483709	0.0192961	0.0189782
Medium End	0.7231887	1.7390979	1.6195763	0.6170217	0.6335886
Medium (TOL) Bar	0.6121212	0.0966095	0.0220822	0.0937948	0.0940525
Medium (TOL) Cra	0.3469099	0.0528355	0.0500478	0.0169402	0.0119483
Medium (TOL) End	0.4934014	1.0975713	0.7118781	0.8353996	0.8052423
Medium (MOL) Bar	0.9170163	0.1185048	0.1170090	0.0122947	0.0187711
Medium (MOL) Cra	0.7418132	0.3026796	0.2662830	0.0104079	0.1439043
Medium (MOL) End	1.1221953	0.6760392	0.0703855	0.6723653	0.5427689
Tight Bar	0.6617611	0.0932984	0.0276811	0.0890060	0.0890977
Tight Cra	0.3120546	0.0594138	0.0556219	0.0208889	0.0039106
Tight End	1.1637954	0.0353383	0.0265953	0.0098935	0.0232711
Tight (TOL) Bar	0.6191794	0.1123516	0.0295489	0.1083968	0.1082279
Tight (TOL) Cra	0.2721398	0.0619927	0.0548235	0.0289407	0.0020151
Tight (TOL) End	1.0853954	0.1133988	0.0495742	0.0824346	0.1019891
Tight (MOL) Bar	0.9090242	0.1736012	0.1696875	0.0286471	0.0366560
Tight (MOL) Cra	0.7308946	0.4059703	0.3316533	0.1340660	0.2341325
Tight (MOL) End	1.5144621	0.1556165	0.0923081	0.0599540	0.1252831

Table 7: Scale Factors for Cut-Based τ ID + Medium Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8124786	0.0805760	0.0411234	0.0690376	0.0692925
Loose Cra	0.4561998	0.0791106	0.0759014	0.0187244	0.0223055
Loose End	1.2081821	0.1160400	0.0549181	0.0609972	0.1022225
Loose (TOL) Bar	0.7729281	0.1603227	0.1159091	0.1107636	0.1097299
Loose (TOL) Cra	0.4457816	0.0855873	0.0810229	0.0275788	0.0207555
Loose (TOL) End	1.0674553	0.1630496	0.0632818	0.1126766	0.1502689
Loose (MOL) Bar	0.9377642	0.1936770	0.1878855	0.0470096	0.0432235
Loose (MOL) Cra	0.9443841	0.3987091	0.3413378	0.2060525	0.1475862
Loose (MOL) End	1.4031850	0.2138700	0.1088676	0.1357173	0.1840880
Medium Bar	0.8006903	0.0779275	0.0437675	0.0644771	0.0638931
Medium Cra	0.4504415	0.0951929	0.0794746	0.0285463	0.0523981
Medium End	1.2466551	0.1283545	0.0589622	0.0714220	0.1140107
Medium (TOL) Bar	0.7685443	0.1419609	0.0923383	0.1078270	0.1062255
Medium (TOL) Cra	0.4289985	0.1007338	0.0836317	0.0556849	0.0561533
Medium (TOL) End	1.1008200	0.1792771	0.0691436	0.1226992	0.1654073
Medium (MOL) Bar	0.9436762	0.1475062	0.1441444	0.0313130	0.0117429
Medium (MOL) Cra	0.9966487	0.4275167	0.3866575	0.1823916	0.1744255
Medium (MOL) End	1.5058334	0.2391771	0.1246031	0.1146942	0.2041564
Tight Bar	0.8354999	0.0984123	0.0579718	0.0795257	0.0770585
Tight Cra	0.4296109	0.1366279	0.1026062	0.0179428	0.0902177
Tight End	1.2369643	0.1490359	0.0679428	0.0838600	0.1326484
Tight (TOL) Bar	0.8188521	0.1590688	0.0635820	0.1458092	0.1421313
Tight (TOL) Cra	0.3924868	0.1286335	0.1061840	0.0429953	0.0726062
Tight (TOL) End	1.0375894	0.1940561	0.0779302	0.1507869	0.1777210
Tight (MOL) Bar	1.0333290	0.1039081	0.0931291	0.0460867	0.0227318
Tight (MOL) Cra	1.2923780	0.7010176	0.6726137	0.1696292	0.1975265
Tight (MOL) End	1.4495858	0.3009322	0.1445333	0.2373663	0.2639516

Table 8: Scale Factors for LLH-Based τ ID + Medium Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8237302	0.0638686	0.0392573	0.0487974	0.0503803
Loose Cra	0.4473992	0.3755646	0.3601047	0.1025278	0.1066469
Loose End	1.2190828	0.1214932	0.0552748	0.0595138	0.1081913
Loose (TOL) Bar	0.8018519	0.1337837	0.0923225	0.0968232	0.0956412
Loose (TOL) Cra	0.4308415	0.4200213	0.3924922	0.1495590	0.1493010
Loose (TOL) End	1.0708139	0.1691800	0.0635840	0.1157115	0.1567771
Loose (MOL) Bar	0.9650767	0.1513750	0.1417955	0.0529960	0.0517504
Loose (MOL) Cra	0.8846477	2.6469914	2.4743974	0.9401711	0.9377395
Loose (MOL) End	1.4324085	0.2283545	0.1107354	0.1384535	0.1997087
Medium Bar	0.8229810	0.0725844	0.0419670	0.0592225	0.0583727
Medium Cra	0.4156225	0.0941137	0.0809175	0.0370975	0.0480613
Medium End	1.2192526	0.1241168	0.0577435	0.0619063	0.1098669
Medium (TOL) Bar	0.7982036	0.1164474	0.0466348	0.1067019	0.1042846
Medium (TOL) Cra	0.3955444	0.1111588	0.0852732	0.0698425	0.0713083
Medium (TOL) End	1.0463681	0.1581635	0.0653937	0.1060616	0.1440121
Medium (MOL) Bar	0.9756273	0.0774377	0.0672512	0.0383925	0.0255415
Medium (MOL) Cra	0.8867062	0.4611289	0.4045732	0.2101077	0.2212702
Medium (MOL) End	1.3747600	0.2156346	0.1140931	0.1211529	0.1829786
Tight Bar	0.8072127	0.0840107	0.0453671	0.0707086	0.0700907
Tight Cra	0.3770484	0.0942984	0.0898513	0.0071822	0.0286191
Tight End	1.2433308	0.1351491	0.0625275	0.0768969	0.1198155
Tight (TOL) Bar	0.7795769	0.1312886	0.0499883	0.1213999	0.1196472
Tight (TOL) Cra	0.3473893	0.1034374	0.0937797	0.0375524	0.0436435
Tight (TOL) End	1.0552479	0.1687326	0.0706984	0.1216733	0.1532075
Tight (MOL) Bar	0.9689600	0.0810968	0.0732953	0.0347067	0.0215462
Tight (MOL) Cra	0.7654710	0.4953908	0.4505068	0.1971452	0.2060481
Tight (MOL) End	1.4433433	0.2496237	0.1276232	0.1399906	0.2145332

Table 9: Scale Factors for BDT-Based τ ID + Medium Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8434964	0.1047406	0.0927059	0.0482102	0.0487479
Loose Cra	0.4486805	0.0907050	0.0766577	0.0331719	0.0484875
Loose End	1.2430123	0.1252014	0.0579821	0.0541773	0.1109664
Loose (TOL) Bar	0.8217177	0.1468781	0.1088767	0.0985858	0.0983895
Loose (TOL) Cra	0.4352673	0.1605499	0.1475498	0.0632890	0.0619983
Loose (TOL) End	1.1103685	0.1752783	0.0674565	0.1151063	0.1617784
Loose (MOL) Bar	1.0024017	0.1701405	0.1651313	0.0336435	0.0409827
Loose (MOL) Cra	1.0981014	0.9002405	0.8546281	0.2829205	0.2674548
Loose (MOL) End	1.5090092	0.2359309	0.1187793	0.1372205	0.2038504
Medium Bar	0.8048589	0.0724851	0.0471702	0.0525045	0.0550376
Medium Cra	0.4700245	0.1180059	0.0898978	0.0319667	0.0764453
Medium End	1.2505576	0.1565464	0.0680121	0.0622866	0.1410010
Medium (TOL) Bar	0.7856233	0.1074411	0.0529455	0.0933444	0.0934904
Medium (TOL) Cra	0.4471138	0.1165602	0.0943209	0.0642218	0.0684833
Medium (TOL) End	1.1115613	0.1910753	0.0788206	0.0969186	0.1740611
Medium (MOL) Bar	0.9298893	0.1625164	0.1602321	0.0232448	0.0271542
Medium (MOL) Cra	1.4398306	0.6480692	0.5588770	0.3081455	0.3281010
Medium (MOL) End	1.5401165	0.2918439	0.1385299	0.1101416	0.2568705
Tight Bar	0.8068334	0.1059315	0.0605655	0.0826109	0.0869104
Tight Cra	0.3139588	0.1136947	0.0913357	0.0518758	0.0677075
Tight End	1.2483808	0.1633526	0.0879524	0.0896787	0.1376538
Tight (TOL) Bar	0.7759156	0.1362483	0.0669802	0.1165068	0.1186482
Tight (TOL) Cra	0.2730465	0.1111004	0.0916416	0.0628113	0.0209356
Tight (TOL) End	1.1322653	0.2011608	0.1025791	0.1305046	0.1730416
Tight (MOL) Bar	0.9028020	0.1083941	0.0939557	0.0489055	0.0540530
Tight (MOL) Cra	1.3270515	0.7776758	0.6801880	0.3624017	0.3769934
Tight (MOL) End	1.4553650	0.3019044	0.1722513	0.1537492	0.2479432

Table 10: Scale Factors for Cut-Based τ ID + Tight Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8354417	0.2894116	0.2600368	0.1267477	0.1270435
Loose Cra	0.4300248	0.1399078	0.1311625	0.0486898	0.0317780
Loose End	1.4851073	0.1414623	0.0809936	0.0562899	0.1159818
Loose (TOL) Bar	0.8914166	0.3330517	0.2927842	0.1583347	0.1587485
Loose (TOL) Cra	0.4476758	0.1460838	0.1366114	0.0517491	0.0346857
Loose (TOL) End	1.3511349	0.2681628	0.1058562	0.1927581	0.2463856
Loose (MOL) Bar	1.1202650	0.5489652	0.5328511	0.1307035	0.1320328
Loose (MOL) Cra	1.1552216	0.9515875	0.8327487	0.4604873	0.1285121
Loose (MOL) End	1.8598253	0.3187033	0.1710302	0.1822212	0.2689248
Medium Bar	0.7874398	0.2046690	0.1859717	0.0846640	0.0854636
Medium Cra	0.4157357	0.1474337	0.1330993	0.0605835	0.0634144
Medium End	1.5133901	0.1634870	0.0840635	0.0669210	0.1402193
Medium (TOL) Bar	0.8433500	0.2381035	0.2075933	0.1158492	0.1166123
Medium (TOL) Cra	0.4320609	0.1540012	0.1383920	0.0646919	0.0675586
Medium (TOL) End	1.3830724	0.2854323	0.1110057	0.1827085	0.2629629
Medium (MOL) Bar	1.0387315	0.3636451	0.3562405	0.0720013	0.0730110
Medium (MOL) Cra	1.2572644	1.0194955	0.9128081	0.4432688	0.4540403
Medium (MOL) End	1.9234260	0.3327867	0.1828555	0.1075375	0.2780484
Tight Bar	0.8744968	0.1557070	0.1071582	0.1124115	0.1129688
Tight Cra	0.2689559	0.1829046	0.1357134	0.0566496	0.1226215
Tight End	1.5039367	0.1797595	0.0947813	0.0695309	0.1527420
Tight (TOL) Bar	0.9326595	0.2099957	0.1170236	0.1738689	0.1743666
Tight (TOL) Cra	0.2771095	0.1888780	0.1398514	0.0596805	0.1269511
Tight (TOL) End	1.3372213	0.2952009	0.1240622	0.2032071	0.2678661
Tight (MOL) Bar	1.1962927	0.2005896	0.1777075	0.0876283	0.0930396
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	1.8070572	0.3622939	0.2045331	0.2341171	0.2990372

Table 11: Scale Factors for LLH-Based τ ID + Tight Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.9061178	0.2089425	0.1748447	0.1077264	0.1143962
Loose Cra	0.2542881	0.7222077	0.7026060	0.1671199	0.1660920
Loose End	1.5086555	0.1602544	0.0818375	0.0514080	0.1377832
Loose (TOL) Bar	0.9875866	0.2479675	0.1976509	0.1428755	0.1497403
Loose (TOL) Cra	0.2645874	0.7506447	0.7301861	0.1740572	0.1729925
Loose (TOL) End	1.3811649	0.2916254	0.1075415	0.1954402	0.2710726
Loose (MOL) Bar	1.2781973	0.3739491	0.3387849	0.1350180	0.1583126
Loose (MOL) Cra	0.0000000	0.6844741	0.0000000	0.6844742	0.6844742
Loose (MOL) End	1.9167701	0.3467963	0.1749001	0.1732173	0.2994624
Medium Bar	0.8831144	0.1950141	0.1686132	0.0961809	0.0979805
Medium Cra	0.3543414	0.1667381	0.1352460	0.0819595	0.0975206
Medium End	1.4840952	0.1643414	0.0842686	0.0557716	0.1410922
Medium (TOL) Bar	0.9512808	0.1610537	0.0866421	0.1337543	0.1357630
Medium (TOL) Cra	0.3670447	0.1733098	0.1401409	0.0860242	0.1019653
Medium (TOL) End	1.2990752	0.2677061	0.1076112	0.1652040	0.2451255
Medium (MOL) Bar	1.2293745	0.3215694	0.3159428	0.0533804	0.0598932
Medium (MOL) Cra	0.7566281	0.8012981	0.7680266	0.2206988	0.2285039
Medium (MOL) End	1.7829545	0.3202630	0.1754811	0.1286953	0.2679083
Tight Bar	0.8392713	0.1489802	0.0835436	0.1226784	0.1233518
Tight Cra	0.3357763	0.1936966	0.1516689	0.0730840	0.1204786
Tight End	1.5265156	0.1778046	0.0911263	0.0702614	0.1526779
Tight (TOL) Bar	0.8842339	0.1827599	0.0907799	0.1578509	0.1586203
Tight (TOL) Cra	0.3453001	0.1992621	0.1559895	0.0753072	0.1239870
Tight (TOL) End	1.3659902	0.3029772	0.1188328	0.1998648	0.2787006
Tight (MOL) Bar	1.1547985	0.1972964	0.1881562	0.0560009	0.0593571
Tight (MOL) Cra	0.8587665	0.9107690	0.8789965	0.2287962	0.2384649
Tight (MOL) End	1.9299405	0.3701690	0.2007440	0.1437145	0.3110098

Table 12: Scale Factors for BDT-Based τ ID + Tight Cut-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8956192	0.2438630	0.2191467	0.1043132	0.1069767
Loose Cra	0.2856007	0.2599095	0.2534577	0.0540048	0.0575524
Loose End	1.5160337	0.1644509	0.0847772	0.0464345	0.1409151
Loose (TOL) Bar	0.9569303	0.2848280	0.2460699	0.1406823	0.1434459
Loose (TOL) Cra	0.2969774	0.2700316	0.2632296	0.0566609	0.0602275
Loose (TOL) End	1.4132071	0.2956376	0.1126014	0.1851153	0.2733544
Loose (MOL) Bar	1.2559171	0.4571319	0.4337660	0.1321471	0.1442800
Loose (MOL) Cra	0.0000000	0.6682486	0.0000000	0.6682487	0.5895274
Loose (MOL) End	1.9905628	0.3567913	0.1845208	0.1567806	0.3053723
Medium Bar	0.9118048	0.1444326	0.0902795	0.1093984	0.1127409
Medium Cra	0.3651910	0.1549377	0.1393558	0.0447191	0.0677180
Medium End	1.5569197	0.2180288	0.0980743	0.0634455	0.1947259
Medium (TOL) Bar	0.9717858	0.1786381	0.0996857	0.1446517	0.1482378
Medium (TOL) Cra	0.3813765	0.1623003	0.1456018	0.0481810	0.0717052
Medium (TOL) End	1.4622208	0.3376649	0.1279627	0.1586689	0.3124792
Medium (MOL) Bar	1.2960496	0.1691162	0.1624496	0.0165182	0.0470166
Medium (MOL) Cra	1.0978314	1.2011682	1.1130109	0.4434308	0.4516769
Medium (MOL) End	2.0200554	0.4364538	0.2094869	0.1268955	0.3828934
Tight Bar	0.8494450	0.2029226	0.1118166	0.1635806	0.1693363
Tight Cra	0.0924892	0.1301011	0.0927022	0.0912838	0.0474016
Tight End	1.5363732	0.2211472	0.1240906	0.0940132	0.1830513
Tight (TOL) Bar	0.9080354	0.2306703	0.1228292	0.1887294	0.1952482
Tight (TOL) Cra	0.0955077	0.1344109	0.0957328	0.0943483	0.0491127
Tight (TOL) End	1.4466576	0.3230478	0.1573787	0.1718350	0.2821204
Tight (MOL) Bar	1.1682062	0.2266150	0.1951459	0.0621413	0.1152064
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	1.8307839	0.4575930	0.2438457	0.2127719	0.3872089

Table 13: Scale Factors for Cut-Based τ ID + Loose BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8574604	0.1667000	0.1279351	0.1050591	0.1068720
Loose Cra	0.4847971	0.1168323	0.1097896	0.0399523	0.0393616
Loose End	1.3726675	0.1094148	0.0672393	0.0587799	0.0863167
Loose (TOL) Bar	0.8524735	0.1766241	0.1335788	0.1136816	0.1155548
Loose (TOL) Cra	0.4859679	0.1170367	0.1100619	0.0398003	0.0392044
Loose (TOL) End	1.3236283	0.1239669	0.0828499	0.0826617	0.0922160
Loose (MOL) Bar	1.1351445	0.3176518	0.2996590	0.0962376	0.1053911
Loose (MOL) Cra	1.0621244	0.4571025	0.4450767	0.1041610	0.0668183
Loose (MOL) End	1.5672047	0.2316145	0.1395071	0.1848868	0.1724125
Medium Bar	0.7753594	0.1499179	0.1212599	0.0880590	0.0881566
Medium Cra	0.3710323	0.1156062	0.1082533	0.0404793	0.0405731
Medium End	1.3468411	0.1058281	0.0772183	0.0192635	0.0723678
Medium (TOL) Bar	0.7573741	0.1550899	0.1239022	0.0930888	0.0932806
Medium (TOL) Cra	0.3721757	0.1158796	0.1085925	0.0403508	0.0404455
Medium (TOL) End	1.2696379	0.1352678	0.0981584	0.0554157	0.0930721
Medium (MOL) Bar	0.9492881	0.2889820	0.2777501	0.0777817	0.0797844
Medium (MOL) Cra	0.3642592	0.3745271	0.3673996	0.0669093	0.0727204
Medium (MOL) End	1.6336139	0.2646884	0.1795498	0.1337444	0.1944787
Tight Bar	0.8752299	0.1621745	0.0844644	0.1384431	0.1359510
Tight Cra	0.2782015	0.1693658	0.1255157	0.0814542	0.1137134
Tight End	1.1931439	0.1372330	0.1007584	0.0531664	0.0931703
Tight (TOL) Bar	0.8408009	0.1616493	0.0837159	0.1382832	0.1358987
Tight (TOL) Cra	0.2782015	0.1693714	0.1255233	0.0814542	0.1137134
Tight (TOL) End	1.1269081	0.1785267	0.1268898	0.1255822	0.1011381
Tight (MOL) Bar	1.1868725	0.1715257	0.1584342	0.0642159	0.0657253
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	1.5243808	0.3343709	0.2475710	0.2247499	0.2110198

Table 14: Scale Factors for LLH-Based τ ID + Loose BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8643257	0.1489543	0.1073590	0.1010908	0.1032550
Loose Cra	0.5615431	0.1284079	0.1243406	0.0256074	0.0320640
Loose End	1.3868099	0.1059900	0.0685608	0.0628605	0.0808295
Loose (TOL) Bar	0.8500639	0.1552304	0.1076231	0.1096819	0.1118654
Loose (TOL) Cra	0.5615431	0.1283970	0.1243476	0.0255184	0.0319930
Loose (TOL) End	1.3192515	0.1362427	0.0841521	0.0894151	0.1071480
Loose (MOL) Bar	1.1555013	0.2711495	0.2274954	0.1336024	0.1475401
Loose (MOL) Cra	1.4721332	0.6271809	0.5373570	0.3022089	0.3234247
Loose (MOL) End	1.6199958	0.2554176	0.1431016	0.2043880	0.2115662
Medium Bar	0.8596768	0.1606113	0.1113930	0.1152895	0.1157051
Medium Cra	0.5912811	0.1727573	0.1605158	0.0440220	0.0638735
Medium End	1.4289663	0.1136459	0.0902529	0.0648010	0.0690649
Medium (TOL) Bar	0.8497499	0.1700249	0.1132365	0.1262863	0.1268307
Medium (TOL) Cra	0.5912811	0.1727622	0.1605211	0.0440220	0.0638735
Medium (TOL) End	1.3472895	0.1452301	0.1078197	0.0972979	0.0828455
Medium (MOL) Bar	1.1974309	0.2339880	0.2283381	0.0412461	0.0511103
Medium (MOL) Cra	1.5112512	0.8487886	0.7003334	0.4647413	0.4795575
Medium (MOL) End	1.5601992	0.3781746	0.3435267	0.1581318	0.1474998
Tight Bar	0.8191381	0.1510685	0.0642951	0.1360120	0.1367039
Tight Cra	0.7164976	0.2566596	0.2203208	0.0620386	0.1316551
Tight End	1.5228240	0.1583129	0.1305255	0.0581707	0.0895887
Tight (TOL) Bar	0.8098449	0.1570277	0.0648638	0.1421941	0.1430050
Tight (TOL) Cra	0.7164976	0.2566725	0.2203357	0.0620386	0.1316551
Tight (TOL) End	1.3634975	0.1775559	0.1467574	0.0713148	0.0999422
Tight (MOL) Bar	1.1464279	0.1205852	0.1114059	0.0326395	0.0461485
Tight (MOL) Cra	2.1358911	1.3073760	1.1258199	0.6244701	0.6646516
Tight (MOL) End	1.6495241	0.3455974	0.2334300	0.0395632	0.2548493

Table 15: Scale Factors for BDT-Based τ ID + Loose BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.8608710	0.1654382	0.1349082	0.0945345	0.0957584
Loose Cra	0.4118532	0.1175202	0.1074722	0.0471602	0.0475486
Loose End	1.4692554	0.1203727	0.0826831	0.0670702	0.0874826
Loose (TOL) Bar	0.8441458	0.1757973	0.1383281	0.1070522	0.1084902
Loose (TOL) Cra	0.4132103	0.1178507	0.1078383	0.0471466	0.0475376
Loose (TOL) End	1.3722687	0.1433868	0.1024063	0.0789565	0.1003638
Loose (MOL) Bar	1.1390951	0.2909943	0.2749316	0.0893357	0.0953440
Loose (MOL) Cra	0.7914368	0.4257784	0.4027000	0.1382756	0.1083166
Loose (MOL) End	1.7025655	0.4664331	0.4390672	0.0818405	0.1574164
Medium Bar	0.8217239	0.1669901	0.1355064	0.0972230	0.0975900
Medium Cra	0.4914749	0.1631321	0.1435832	0.0680164	0.0774343
Medium End	1.4050318	0.1697445	0.1040525	0.0570982	0.1341131
Medium (TOL) Bar	0.7925111	0.1737426	0.1366838	0.1068085	0.1072575
Medium (TOL) Cra	0.4918830	0.1633110	0.1437154	0.0681496	0.0775660
Medium (TOL) End	1.2508422	0.1535291	0.1273475	0.0611741	0.0857553
Medium (MOL) Bar	1.1016617	0.2587881	0.2526680	0.0485210	0.0559489
Medium (MOL) Cra	1.2694301	0.8035732	0.7504875	0.1193290	0.2872256
Medium (MOL) End	1.5890912	0.2816973	0.2074813	0.0583302	0.1905389
Tight Bar	0.8419814	0.2359097	0.2101427	0.1012456	0.1072078
Tight Cra	0.3360118	0.1968872	0.1514970	0.1257512	0.0793083
Tight End	1.4846540	0.2044451	0.1374654	0.1051675	0.1513311
Tight (TOL) Bar	0.8107395	0.2433150	0.2120416	0.1128772	0.1193341
Tight (TOL) Cra	0.3360118	0.1968872	0.1514970	0.1257512	0.0793083
Tight (TOL) End	1.2440841	0.2356718	0.1635907	0.1388421	0.1696449
Tight (MOL) Bar	1.0027665	0.4740377	0.4674625	0.0637273	0.0786813
Tight (MOL) Cra	1.1478611	1.2909891	1.1706263	0.5368570	0.5443227
Tight (MOL) End	1.5753854	0.4365861	0.2612149	0.1556577	0.3498204

Table 16: Scale Factors for Cut-Based τ ID + Medium BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.9607942	0.4584208	0.4009124	0.2199290	0.2223040
Loose Cra	0.2193908	0.4099813	0.2204232	0.3456855	0.2919488
Loose End	1.6099837	0.6791963	0.5529032	0.3944691	0.3924090
Loose (TOL) Bar	0.8942030	0.4657094	0.4088362	0.2202949	0.2230210
Loose (TOL) Cra	0.2193908	0.4099813	0.2204232	0.3456855	0.2919488
Loose (TOL) End	1.3929534	0.7909283	0.6509413	0.4492696	0.4321852
Loose (MOL) Bar	1.2380043	0.8639436	0.7935513	0.3373757	0.3415775
Loose (MOL) Cra	1.1798026	1.9176565	1.2051869	1.4916204	1.1108688
Loose (MOL) End	2.0447551	1.5171483	1.3019215	0.7789350	0.6955041
Medium Bar	0.7155817	0.3835897	0.3215605	0.2091413	0.2091413
Medium Cra	0.3584141	0.3752227	0.3612171	0.0976109	0.1015600
Medium End	1.8021964	0.3817441	0.2566330	0.2529041	0.2826098
Medium (TOL) Bar	0.6644510	0.3890597	0.3250232	0.2138398	0.2138401
Medium (TOL) Cra	0.3584141	0.3752227	0.3612171	0.0976109	0.1015600
Medium (TOL) End	1.5199246	0.4035959	0.2568384	0.2976131	0.3113259
Medium (MOL) Bar	0.8550244	0.7216603	0.6202523	0.3688726	0.3688912
Medium (MOL) Cra	1.9389843	2.2041517	2.0071180	0.8981889	0.9109129
Medium (MOL) End	2.3501321	0.7537940	0.4901776	0.5094954	0.5726530
Tight Bar	0.8067261	0.1894711	0.1544480	0.1043802	0.1097507
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	1.2865636	0.4810537	0.3056000	0.3566416	0.3715124
Tight (TOL) Bar	0.7629757	0.1865864	0.1515870	0.1028931	0.1087932
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	1.3429217	0.4990341	0.3381540	0.3669974	0.3244583
Tight (MOL) Bar	1.0510568	0.2532232	0.2432482	0.0081939	0.0703740
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	2.3723274	1.0300001	0.7286512	0.7279890	0.7081405

Table 17: Scale Factors for LLH-Based τ ID + Medium BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	0.9668391	0.3785241	0.2806593	0.2472160	0.2539901
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	1.6836301	0.9019566	0.7859324	0.4425338	0.4077590
Loose (TOL) Bar	0.9159891	0.3737584	0.2735065	0.2475699	0.2547345
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	1.5852571	1.0378561	0.8921312	0.5303277	0.4103744
Loose (MOL) Bar	1.2524773	0.6953664	0.5322283	0.4308458	0.4475127
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	2.4403034	1.0157031	0.4321051	0.9192051	0.6575425
Medium Bar	1.0501654	0.3601208	0.3141480	0.1747460	0.1760628
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.9167043	1.0389526	0.8722508	0.5644478	0.4994249
Medium (TOL) Bar	1.0119099	0.3576025	0.3132471	0.1707914	0.1724990
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.9295413	1.2295009	1.0154651	0.6931834	0.5765517
Medium (MOL) Bar	1.4256887	0.5794665	0.5503744	0.1790878	0.1813000
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.8179750	2.2640225	1.7001826	1.4950509	1.3090366
Tight Bar	0.8626109	0.2335776	0.1731921	0.1567259	0.1538174
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	1.1767716	0.6301340	0.4290211	0.1747791	0.4615299
Tight (TOL) Bar	0.8320482	0.2258251	0.1714575	0.1469675	0.1439832
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	1.0363693	0.5917933	0.4398001	0.2928872	0.3959739
Tight (MOL) Bar	1.1463975	0.3163213	0.2837737	0.1397559	0.1357185
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	1.3913541	0.9992025	0.6642504	0.3982538	0.7464431

Table 18: Scale Factors for BDT-Based τ ID + Medium BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.0878210	0.4124278	0.3615784	0.1945898	0.1983882
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	1.7626424	0.9417567	0.9186853	0.1927530	0.2071792
Loose (TOL) Bar	1.0103073	0.4119811	0.3586346	0.2007016	0.2027557
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	1.6512952	1.0926803	1.0543208	0.2869810	0.2416864
Loose (MOL) Bar	1.4417787	0.7343613	0.6775653	0.2709668	0.2831818
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	2.3791644	2.3783448	2.2696202	0.7108786	0.5522436
Medium Bar	1.0156509	0.3632296	0.3233991	0.1630556	0.1653752
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.0000000	2.2375574	0.0000000	2.2375575	2.1173444
Medium (TOL) Bar	0.9453823	0.3590125	0.3176577	0.1645543	0.1672832
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.0000000	2.1301080	0.0000000	2.1301081	2.0294594
Medium (MOL) Bar	1.4345375	0.6161011	0.5896504	0.1606073	0.1785865
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	2.9667639	0.0000000	2.9667640	2.9413469
Tight Bar	0.8186163	0.5905280	0.5344037	0.2512690	0.2500896
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	2.0345312	0.6801428	0.4994842	0.2394077	0.4616383
Tight (TOL) Bar	0.8110254	0.6005327	0.5402077	0.2623268	0.2612205
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	2.1523737	0.7584605	0.5796895	0.2957292	0.4891038
Tight (MOL) Bar	1.1342469	0.9734216	0.9464089	0.2277281	0.2276538
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	3.1469959	1.2948170	0.9685293	0.2992056	0.8593615

Table 19: Scale Factors for Cut-Based τ ID + Tight BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.0969193	0.9219601	0.8451836	0.3626453	0.3683412
Loose Cra	0.5427837	1.0643151	0.5489298	0.9118349	0.7886572
Loose End	1.6958793	1.8993843	1.7304941	0.7829758	0.7582607
Loose (TOL) Bar	0.9854339	0.9355651	0.8535223	0.3770383	0.3831212
Loose (TOL) Cra	0.5427837	1.0643151	0.5489298	0.9118349	0.7886572
Loose (TOL) End	1.5349107	2.0228851	1.8278241	0.8666738	0.8188593
Loose (MOL) Bar	1.1087677	1.5107844	1.3917859	0.5820019	0.5877089
Loose (MOL) Cra	1.9388486	3.7605293	2.0180732	3.1731627	2.7196095
Loose (MOL) End	2.1909717	4.4011587	3.9885527	1.8605498	1.5985530
Medium Bar	0.7062747	0.7274361	0.6511309	0.3219390	0.3243332
Medium Cra	0.8731251	0.9209093	0.8904463	0.2247350	0.2349032
Medium End	2.1925823	1.6507935	1.6125458	0.2613552	0.3532923
Medium (TOL) Bar	0.6338904	0.7440904	0.6574173	0.3461327	0.3485300
Medium (TOL) Cra	0.8731251	0.9209093	0.8904463	0.2247350	0.2349032
Medium (TOL) End	2.1131357	1.7648758	1.7177216	0.3808569	0.4052399
Medium (MOL) Bar	0.5035466	1.1730882	1.0141531	0.5854383	0.5896012
Medium (MOL) Cra	3.3298024	3.7350364	3.5967020	0.9727593	1.0070911
Medium (MOL) End	2.7145793	1.2652642	0.9467375	0.7392444	0.8393938
Tight Bar	0.8340359	0.2435450	0.2338533	0.0665821	0.0680219
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	1.2166461	1.1097085	0.5615114	0.9571615	0.8824419
Tight (TOL) Bar	0.7235283	0.2271919	0.2211660	0.0478176	0.0519800
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	1.3018764	1.1744932	0.6026757	1.0080756	0.9267303
Tight (MOL) Bar	0.6799922	0.2695561	0.2604943	0.0591130	0.0693061
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	2.2722712	2.7598074	1.3720517	2.3945796	2.1656081

Table 20: Scale Factors for LLH-Based τ ID + Tight BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.1551093	0.7114121	0.5311681	0.4442287	0.4732523
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	1.2664559	3.3053711	2.9191670	1.5504652	1.2699645
Loose (TOL) Bar	1.0487697	0.7052110	0.5094206	0.4582057	0.4876611
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	1.1147628	3.3080062	2.9158939	1.5621998	1.2805815
Loose (MOL) Bar	1.2681237	1.1196845	0.8369609	0.6914720	0.7437675
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	1.2579124	8.4158370	7.2628361	4.2517673	3.5006684
Medium Bar	1.0281493	0.6082488	0.5398838	0.2724370	0.2801646
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	0.2715093	5.4807181	4.7715948	2.6963224	2.4542248
Medium (TOL) Bar	0.9706602	0.6104515	0.5346100	0.2860990	0.2946920
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	0.1398107	5.3134951	4.6323706	2.6027627	2.3644160
Medium (MOL) Bar	1.2657700	0.8647913	0.7926282	0.3443812	0.3458391
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	0.0000000	2.9562468	0.0000000	2.9562469	2.8825338
Tight Bar	0.8423258	0.3286420	0.3017169	0.1302792	0.1286823
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	2.0044160	1.5423792	1.1895955	0.9817313	0.3883771
Tight (TOL) Bar	0.7523785	0.3206823	0.2897885	0.1373314	0.1361740
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	1.3646611	1.3628429	0.9853022	0.9415522	0.3806495
Tight (MOL) Bar	0.8447983	0.4201437	0.3695671	0.1982674	0.1998526
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	1.6797039	2.6528366	1.7158525	2.0232134	0.4470047

Table 21: Scale Factors for BDT-Based τ ID + Tight BDT-Based e-veto

Selection	scale factor	total	stat	+syst	- syst
Loose Bar	1.2757108	0.7418563	0.6611447	0.3268461	0.3365095
Loose Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose End	0.6133093	3.9599153	3.2665355	2.2384538	1.9808610
Loose (TOL) Bar	1.1368732	0.7384028	0.6429102	0.3545715	0.3631878
Loose (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (TOL) End	0.5321532	4.0376379	3.3190739	2.2991887	2.0411940
Loose (MOL) Bar	1.4323226	1.1501451	1.0356883	0.4796469	0.5001837
Loose (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Loose (MOL) End	0.1735442	8.7614429	7.0319034	5.2263962	4.7981293
Medium Bar	1.1867618	0.6020951	0.5381114	0.2698255	0.2701015
Medium Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium End	1.9840516	2.1776300	0.7741000	0.4542917	2.0353972
Medium (TOL) Bar	1.1258838	0.6074970	0.5327783	0.2914521	0.2918904
Medium (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (TOL) End	1.8198853	2.0382692	0.7656476	0.5063034	1.8890012
Medium (MOL) Bar	1.5660607	0.4619412	0.3030028	0.3445353	0.3486820
Medium (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Medium (MOL) End	4.2911044	5.5171107	2.2298303	2.6557091	5.0464213
Tight Bar	0.9137580	1.0658646	0.9810644	0.3958457	0.4166296
Tight Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight End	2.7908359	1.7017119	1.2967566	1.1019284	0.7617997
Tight (TOL) Bar	0.9376702	1.0953022	1.0100932	0.4023302	0.4235550
Tight (TOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (TOL) End	2.2588287	1.5822423	1.1684240	1.0669004	0.7847123
Tight (MOL) Bar	1.2532074	0.4592590	0.3369374	0.3120771	0.3120109
Tight (MOL) Cra	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tight (MOL) End	6.4382246	4.8894625	3.9113207	2.9340100	1.7148688