

Non-centrality parameter  $\phi^2(\alpha, \beta, df)$

$df$	$\alpha = 0.01$			$\alpha = 0.05$		
	$\beta = 0.2$	$\beta = 0.1$	$\beta = 0.05$	$\beta = 0.2$	$\beta = 0.1$	$\beta = 0.05$
1	11.678969	14.879388	17.814164	7.8488598	10.507419	12.994709
2	13.880701	17.426689	20.649918	9.6346894	12.653937	15.443235
3	15.457657	19.247425	22.674256	10.902564	14.171488	17.169897
4	16.749281	20.736954	24.329097	11.935285	15.405052	18.571648
5	17.869336	22.027506	25.762062	12.827606	16.469465	19.780134
6	18.871852	23.181829	27.043174	13.624285	17.418827	20.857285
7	19.787411	24.235423	28.21204	14.350527	18.283551	21.837878
8	20.635291	25.210653	29.293603	15.022139	19.082696	22.743699
9	21.428558	26.122679	30.304774	15.649798	19.829118	23.589435
10	22.176553	26.982331	31.257625	16.24111	20.53197	24.385537
11	22.886229	27.797666	32.161144	16.801718	21.198039	25.139748
12	23.56292	28.57487	33.022218	17.335941	21.832515	25.857997
13	24.210828	29.31881	33.846281	17.847178	22.439481	26.544937
14	24.833337	30.033405	34.637692	18.33815	23.022209	27.204302
15	25.43321	30.721855	35.400025	18.811089	23.583372	27.839138
16	26.012746	31.386822	36.136239	19.267839	24.125186	28.451973
17	26.573881	32.030546	36.848833	19.709957	24.649515	29.044927
18	27.118259	32.654931	37.539924	20.138756	25.157939	29.619806
19	27.647295	33.261615	38.211339	20.555376	25.651817	30.178153
20	28.162216	33.852014	38.864654	20.960792	26.132322	30.721308