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A. Cambi and V. R. Manfredi: NUMERICAL EVALUATION OF THE ASYMMETRY PARAMETER γ AND OF THE $B(E2;2' \rightarrow 2)/B(E2;2' \rightarrow 0)$ RATIO AS A FUNCTION OF $E(2')/E(2)$, IN THE DAVYDOV AND FILIPPOV MODEL.

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A. Cambi and V.R. Manfredi: "NUMERICAL EVALUATION OF THE ASYMMETRY PARAMETER γ AND OF THE $\frac{B(E2;\ 2' \longrightarrow 2)}{B(E2;\ 2' \longrightarrow 0)}$ RATIO AS A FUNCTION OF $\frac{E(2')}{E(2)}$, IN THE DAVYDOV AND FILIPPOV MODEL".

In the course of a study on the asymmetry of the deformed nuclei Ba^{134}, Ba^{132} and Ba^{130}[1], some differences were noted between the numerical values of the asymmetry parameter γ, as reported by Davydov and Filippov[2] and those obtained by interpolation from the data of Moore and White[3].

We thought therefore useful to repeat the calculation with a smaller step than that of Moore and White, in order to avoid uncertainties in the interpolation. In this occasion we calculated also the ratios $\frac{B(E2;\ 2' \longrightarrow 2)}{B(E2;\ 2' \longrightarrow 0)}$ as a function of $\frac{E(2')}{E(2)}$

$$\frac{E(2')}{E(2)} = \frac{1+\sqrt{1-\frac{8}{9}\,\mathrm{sen}^2 3\gamma}}{1-\sqrt{1-\frac{8}{9}\,\mathrm{sen}^2 3\gamma}} \qquad \frac{B(E2;2' \longrightarrow 2)}{B(E2;2' \longrightarrow 0)} = \frac{\frac{10}{7}\,\frac{\mathrm{sen}^2 3\gamma}{9-8\,\mathrm{sen}^2 3\gamma}}{\frac{1}{2}\left[1-\frac{3-2\,\mathrm{sen}^2 3\gamma}{\sqrt{9-8\,\mathrm{sen}^2 3\gamma}}\right]}$$

The calculations were performed with the IBM 1620 computer of

the University of Florence and the results are reported in the Table I.

Our results confirm those of Moore and White in the points they have in common.

The differences with respect to the values reported by Davydov and Filippov are sometimes quite sensible, though they may not be relevant in the comparison with the experimental values; we think however that the results, as shown in Table I, may prove useful at least for a better internal coherence of any comparison with experiment.

REFERENCES -

(1) - V.R. Manfredi and R.A. Ricci, Nuovo Cimento 53 B, 210 (1968).

(2) - A.S. Davydov and G.F. Filippov, Nuclear Phys. 8, 237 (1958).

(3) - R.B. Moore and W. White, Can. J. Phys. 38, 1149 (1960).

TABLE I

$E(2_1^+)/E(2)$	GAMMA	$B(E2; 2_1^+ \to 2)/B(E2; 2_1^+ \to 0)$	$E(2_1^+)/E(2)$	GAMMA	$B(E2; 2_1^+ \to 2)/B(E2; 2_1^+ \to 0)$
2.01	29.2	855.7	2.60	23.9	13.93
2.02	28.9	427.2	2.61	23.9	13.71
2.03	28.6	284.4	2.62	23.8	13.49
2.04	28.4	213.0	2.63	23.8	13.28
2.05	28.3	170.1	2.64	23.7	13.08
2.06	28.1	141.6	2.65	23.7	12.88
2.07	27.9	121.2	2.66	23.7	12.69
2.08	27.8	105.9	2.67	23.6	12.51
2.09	27.7	94.05	2.68	23.6	12.33
2.10	27.5	84.55	2.69	23.5	12.16
2.11	27.4	76.78	2.70	23.5	11.99
2.12	27.3	70.31	2.71	23.4	11.83
2.13	27.2	64.83	2.72	23.4	11.67
2.14	27.1	60.15	2.73	23.3	11.52
2.15	27.0	56.09	2.74	23.3	11.37
2.16	26.9	52.54	2.75	23.2	11.22
2.17	26.8	49.41	2.76	23.2	11.08
2.18	26.7	46.63	2.77	23.2	10.95
2.19	26.6	44.14	2.78	23.1	10.81
2.20	26.5	41.90	2.79	23.1	10.68
2.21	26.4	39.88	2.80	23.0	10.56
2.22	26.3	38.05	2.81	23.0	10.43
2.23	26.2	36.37	2.82	22.9	10.31
2.24	26.2	34.84	2.83	22.9	10.19
2.25	26.1	33.43	2.84	22.9	10.08
2.26	26.0	32.13	2.85	22.8	9.968
2.27	25.9	30.92	2.86	22.8	9.859
2.28	25.9	29.81	2.87	22.7	9.753
2.29	25.8	28.77	2.88	22.7	9.649
2.30	25.7	27.80	2.89	22.7	9.548
2.31	25.6	26.90	2.90	22.6	9.449
2.32	25.6	26.05	2.91	22.6	9.352
2.33	25.5	25.25	2.92	22.5	9.257
2.34	25.4	24.51	2.93	22.5	9.165
2.35	25.4	23.80	2.94	22.5	9.074
2.36	25.3	23.14	2.95	22.4	8.986
2.37	25.2	22.51	2.96	22.4	8.899
2.38	25.2	21.91	2.97	22.4	8.815
2.39	25.1	21.35	2.98	22.3	8.732
2.40	25.0	20.82	2.99	22.3	8.651
2.41	25.0	20.31	3.00	22.2	8.571
2.42	24.9	19.82	3.01	22.2	8.494
2.43	24.9	19.36	3.02	22.2	8.418
2.44	24.8	18.92	3.03	22.1	8.343
2.45	24.7	18.51	3.04	22.1	8.270
2.46	24.7	18.11	3.05	22.1	8.198
2.47	24.6	17.72	3.06	22.0	8.128
2.48	24.6	17.36	3.07	22.0	8.059
2.49	24.5	17.00	3.08	21.9	7.991
2.50	24.5	16.67	3.09	21.9	7.925
2.51	24.4	16.34	3.10	21.9	7.860
2.52	24.4	16.03	3.11	21.8	7.796
2.53	24.3	15.73	3.12	21.8	7.734
2.54	24.3	15.45	3.13	21.8	7.673
2.55	24.2	15.17	3.14	21.7	7.612
2.56	24.1	14.90	3.15	21.7	7.553
2.57	24.1	14.65	3.16	21.7	7.495
2.58	24.0	14.40	3.17	21.6	7.438
2.59	24.0	14.16	3.18	21.6	7.382

4.

$E(2_1^+)/E(2)$	GAMMA	$B(E2; 2_1^+ \to 2)/B(E2; 2_1^+ \to 0)$	$E(2_1^+)/E(2)$	GAMMA	$B(E2; 2_1^+ \to 2)/B(E2; 2_1^+ \to 0)$
3.19	21.6	7.327	3.86	19.7	5.038
3.20	21.5	7.273	3.87	19.7	5.017
3.21	21.5	7.220	3.88	19.6	4.996
3.22	21.5	7.167	3.89	19.6	4.975
3.23	21.4	7.116	3.90	19.6	4.955
3.24	21.4	7.066	3.91	19.6	4.934
3.25	21.4	7.016	3.92	19.5	4.914
3.26	21.3	6.967	3.93	19.5	4.895
3.27	21.3	6.919	3.94	19.5	4.875
3.28	21.3	6.872	3.95	19.5	4.856
3.29	21.3	6.825	3.96	19.4	4.836
3.30	21.2	6.780	3.97	19.4	4.818
3.31	21.2	6.735	3.98	19.4	4.799
3.32	21.2	6.691	3.99	19.4	4.780
3.33	21.1	6.647	4.0	19.4	4.762
3.34	21.1	6.604	4.1	19.1	4.589
3.35	21.1	6.562	4.2	18.9	4.432
3.36	21.0	6.520	4.3	18.7	4.289
3.37	21.0	6.480	4.4	18.5	4.160
3.38	21.0	6.439	4.5	18.3	4.041
3.39	20.9	6.400	4.6	18.1	3.932
3.40	20.9	6.361	4.7	17.9	3.831
3.41	20.9	6.322	4.8	17.8	3.738
3.42	20.9	6.284	4.9	17.6	3.652
3.43	20.8	6.247	5.0	17.4	3.571
3.44	20.8	6.210	5.1	17.3	3.497
3.45	20.8	6.174	5.2	17.1	3.427
3.46	20.7	6.138	5.3	16.9	3.362
3.47	20.7	6.103	5.4	16.8	3.300
3.48	20.7	6.068	5.5	16.6	3.243
3.49	20.7	6.034	5.6	16.5	3.188
3.50	20.6	6.000	5.7	16.4	3.137
3.51	20.6	5.967	5.8	16.2	3.089
3.52	20.6	5.934	5.9	16.1	3.043
3.53	20.5	5.902	6.0	16.0	3.000
3.54	20.5	5.870	6.1	15.9	2.959
3.55	20.5	5.838	6.2	15.7	2.920
3.56	20.5	5.807	6.3	15.6	2.883
3.57	20.4	5.776	6.4	15.5	2.848
3.58	20.4	5.746	6.5	15.4	2.814
3.59	20.4	5.716	6.6	15.3	2.782
3.60	20.3	5.687	6.7	15.2	2.751
3.61	20.3	5.658	6.8	15.1	2.722
3.62	20.3	5.629	6.9	15.0	2.694
3.63	20.3	5.601	7.0	14.9	2.667
3.64	20.2	5.573	7.1	14.8	2.641
3.65	20.2	5.545	7.2	14.7	2.616
3.66	20.2	5.518	7.3	14.6	2.592
3.67	20.2	5.491	7.4	14.5	2.569
3.68	20.1	5.465	7.5	14.4	2.547
3.69	20.1	5.438	7.6	14.3	2.526
3.70	20.1	5.412	7.7	14.2	2.506
3.71	20.1	5.387	7.8	14.1	2.486
3.72	20.0	5.362	7.9	14.0	2.467
3.73	20.0	5.337	8.0	13.9	2.449
3.74	20.0	5.312	8.1	13.9	2.431
3.75	20.0	5.288	8.2	13.8	2.414
3.76	19.9	5.264	8.3	13.7	2.398
3.77	19.9	5.240	8.4	13.6	2.382
3.78	19.9	5.216	8.5	13.5	2.366
3.79	19.9	5.193	8.6	13.5	2.351
3.80	19.8	5.170	8.7	13.4	2.337
3.81	19.8	5.147	8.8	13.3	2.323
3.82	19.8	5.125	8.9	13.2	2.309
3.83	19.8	5.103	9.0	13.2	2.296
3.84	19.7	5.081	9.1	13.1	2.283
3.85	19.7	5.059	9.2	13.0	2.271

$E(2^1)/E(2)$	GAMMA	$B(E2; 2^1 \rightarrow 2)/B(E2; 2^1 \rightarrow 0)$	$E(2^1)/E(2)$	GAMMA	$B(E2; 2^1 \rightarrow 2)/B(E2; 2^1 \rightarrow 0)$
9.3	13.0	2.259	60	5.21	1.528
9.4	12.9	2.247	65	5.01	1.520
9.5	12.8	2.235	70	4.83	1.513
9.6	12.8	2.224	75	4.66	1.507
9.7	12.7	2.213	80	4.52	1.502
9.8	12.6	2.203	85	4.38	1.498
9.9	12.6	2.193	90	4.26	1.494
10.0	12.5	2.183	95	4.15	1.490
10.1	12.5	2.173	100	4.04	1.487
10.2	12.4	2.163	105	3.94	1.484
10.3	12.3	2.154	110	3.85	1.482
10.4	12.3	2.145	115	3.77	1.479
10.5	12.2	2.136	120	3.69	1.477
10.6	12.2	2.128	125	3.62	1.475
10.7	12.1	2.119	130	3.55	1.473
10.8	12.1	2.111	135	3.48	1.472
10.9	12.0	2.103	140	3.42	1.470
11.0	12.0	2.095	145	3.36	1.469
11.1	11.9	2.088	150	3.30	1.467
11.2	11.9	2.080	155	3.25	1.466
11.3	11.8	2.073	160	3.20	1.465
11.4	11.8	2.066	165	3.15	1.464
11.5	11.7	2.059	170	3.10	1.463
11.6	11.7	2.052	175	3.06	1.462
11.7	11.6	2.045	180	3.02	1.461
11.8	11.6	2.039	185	2.97	1.460
11.9	11.5	2.032	190	2.94	1.459
12.0	11.5	2.026	195	2.90	1.458
12.1	11.4	2.020	200	2.86	1.458
12.2	11.4	2.014	205	2.83	1.457
12.3	11.3	2.008	210	2.79	1.456
12.4	11.3	2.002	215	2.76	1.455
12.5	11.2	1.996	220	2.73	1.455
12.6	11.2	1.991	225	2.70	1.454
12.7	11.2	1.985	230	2.67	1.454
12.8	11.1	1.980	235	2.64	1.453
12.9	11.1	1.975	240	2.61	1.453
13.0	11.0	1.970	245	2.59	1.452
13.1	11.0	1.965	250	2.56	1.452
13.2	11.0	1.960	255	2.53	1.451
13.3	10.9	1.955	260	2.51	1.451
13.4	10.9	1.950	265	2.49	1.450
13.5	10.8	1.945	270	2.46	1.450
13.6	10.8	1.941	275	2.44	1.450
13.7	10.8	1.936	280	2.42	1.449
13.8	10.7	1.932	285	2.40	1.449
13.9	10.7	1.927	290	2.38	1.448
14.0	10.6	1.923	295	2.36	1.448
14.1	10.6	1.919	300	2.34	1.448
14.2	10.6	1.915	305	2.32	1.447
14.3	10.5	1.911	310	2.30	1.447
14.4	10.5	1.907	315	2.28	1.447
14.5	10.5	1.903	320	2.26	1.447
14.6	10.4	1.899	325	2.25	1.446
14.7	10.4	1.895	330	2.23	1.446
14.8	10.4	1.891	335	2.21	1.446
14.9	10.3	1.887	340	2.20	1.446
15	10.3	1.884	345	2.18	1.445
20	8.95	1.754	350	2.16	1.445
25	8.03	1.682	355	2.15	1.445
30	7.34	1.636	360	2.13	1.445
35	6.80	1.604	365	2.12	1.444
40	6.37	1.581	370	2.10	1.444
45	6.01	1.563	375	2.09	1.444
50	5.70	1.549	380	2.08	1.444
55	5.44	1.537	385	2.06	1.444
			390	2.05	1.443
			395	2.04	1.443
			400	2.02	1.443