The general trends predicted by the extension of equation (2.5) considering the states of both bands (g.b., s.b.) observed below and above the crossing may be qualitatively reasonably up to even high spin $I^{\pi} \geq 28_S^+$.

III.2.2- - Method 2: VMI Predictions:-

In an attempt to obtain still better agreement with the experiment data, we have used equations (2.6, 2.8). Where θ_0 and C were determined for the ground state band below I_{cross}, they were substituted back in equation (2.6).The other two adjustable parameters of this model [(12)], E_0 and A, were determined for the super band and substituted in equation (2.8).

These two equations are solved for E corresponding to each value of I. it should be remember that the parameters θ_0, C, E_0, A were determined so as to yield a best fit to the experimental energies. The values of the parameters obtained are listed in table (4).

The results obtained are listed in tables (5, 6) for ($^{176-186}Pt$). The calculated energy levels are shown in figs (4-9) as compared with the observed energy levels for the chosen isotopes. A good agreement is shown.

It can be seen, in tables (5-6) that, the super band crosses the ground state band around spin 14^+ for ^{176}Pt and ^{184}Pt, while the super band crosses the ground state band around spin 16^+ for ^{178}Pt and ^{182}Pt, the super band crosses the ground state band around spin 18^+ for ^{180}Pt and 12^+ for ^{186}Pt.

This crossing may cause the backbending. The backbending phenomenon is currently interpreted as the band crossing of the ground state rotational band (g) and the spin aligned particle super band (s).

Especially $i_{\frac{13}{2}}$ neutrons are considered to be responsible for the backbending in these nuclei due to the large Coriolis force [29].

Table (4). The values of parameters θ_0, C, E_0, A

The nucleus	θ_0 **(Mev)$^{-1}$**	**C (Mev)$^{-3}$**	**E_0 (Mev)**	**A (Mev)**
^{176}Pt	12.0	0.00107	1.290	0.00814
^{178}Pt	15.6	0.00111	1.410	0.00793
^{180}Pt	17.9	0.00150	1.638	0.00756
^{182}Pt	15.6	0.00111	1.445	0.00780
^{184}Pt	14.6	0.00107	1.178	0.00785
^{186}Pt	10.2	0.00104	0.863	0.00933

Table (5). The experimental yrast levels in ^{176}Pt, ^{178}Pt and ^{180}Pt are given along with the calculated energies (method 2).

The nucleus ^{176}Pt			The nucleus ^{178}Pt			The nucleus ^{180}Pt		
I^{π}	E_{ex}	E_{th2}	I^{π}	E_{ex}	E_{th2}	I^{π}	E_{ex}	E_{th2}
(g.b)			(g.b)			(g.b)		
2^+	0.264	0.184	2^+	0.170	0.159	2^+	0.153	0.149
4^+	0.564	0.489	4^+	0.427	0.442	4^+	0.411	0.432
6^+	0.906	0.870	6^+	0.765	0.804	6^+	0.757	0.805
8^+	1.306	1.307	8^+	1.178	1.226	8^+	1.182	1.246
10^+	1.765	1.791	10^+	1.661	1.696	10^+	1.675	1.741
12^+	2.277	2.314	12^+	2.209	2.207	12^+	2.229	2.283
14^+	2.833	2.872	14^+	2.814	2.754	14^+	2.842	2.867
			16^+	3.459	3.334	16^+	3.505	3.487
						18^+	4.252	4.141
(s.b)			(s.b)			(s.b)		
16^+	3.423	3.470	18^+	4.110	4.122	20^+	4.804	4.811
18^+	4.041	4.031	20^+	4.754	4.741	22^+	5.467	5.461
20^+	4.690	4.656	22^+	5.430	5.423	24^+	6.178	6.171
22^+	5.377	5.345	24^+	6.159	6.168	26^+	6.935	6.942
24^+	6.107	6.099						
26^+	6.879	6.916						

Method 2 is the variable moment of inertia (VMI)

Table (6). The experimental yrast levels in ^{182}Pt, ^{184}Pt and ^{186}Pt are given along with the calculated energies (method 2).

The nucleus ^{182}Pt			The nucleus ^{184}Pt			The nucleus ^{186}Pt		
I^{π}	E_{ex}	E_{th2}	I^{π}	E_{ex}	E_{th2}	I^{π}	E_{ex}	E_{th2}
(g.b)			(g.b)			(g.b)		
2^+	0.155	0.159	2^+	0.163	0.165	2^+	0.192	0.198
4^+	0.419	0.442	4^+	0.436	0.453	4^+	0.490	0.514
6^+	0.774	0.804	6^+	0.798	0.817	6^+	0.877	0.902
8^+	1.205	1.226	8^+	1.230	1.240	8^+	1.342	1.346
10^+	1.698	1.696	10^+	1.707	1.710	10^+	1.857	1.835
12^+	2.242	2.207	12^+	2.204	2.221	12^+	2.336	2.362
14^+	2.832	2.754	14^+	2.726	2.767			
16^+	3.461	3.334						
(s.b)			(s.b)			(s.b)		
18^+	4.095	4.112	16^+	3.282	3.313	14^+	2.825	2.823
20^+	4.730	4.720	18^+	3.869	3.862	16^+	3.394	3.401
22^+	5.405	5.391	20^+	4.493	4.475	18^+	4.051	4.055
24^+	6.129	6.124	22^+	5.167	5.150	20^+	4.788	4.783
26^+	6.907	6.919	24^+	5.897	5.888	22^+	5.597	5.585
			26^+	6.686	6.688	24^+	6.463	6.463
			28^+	7.535	7.552	26^+	7.407	7.415

Method 2 is the variable moment of inertia (VMI)

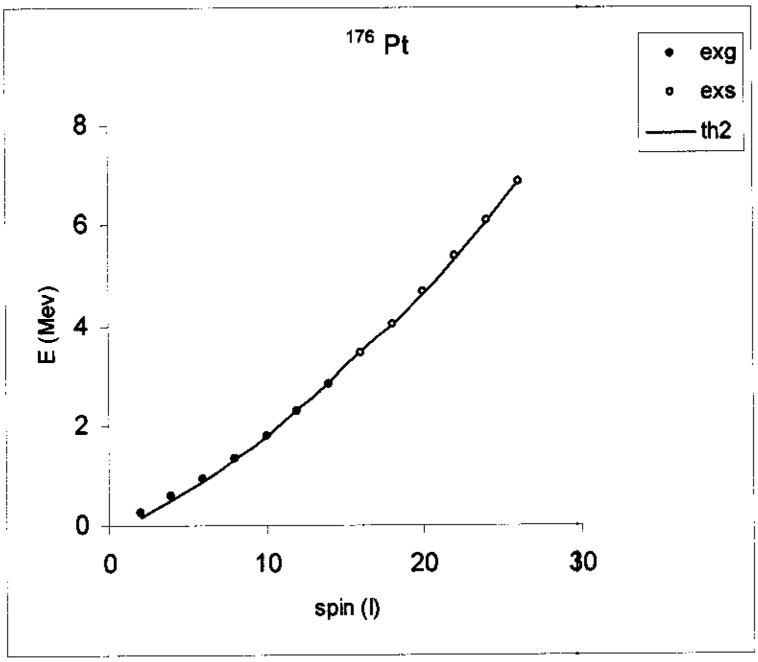

Fig.(4)

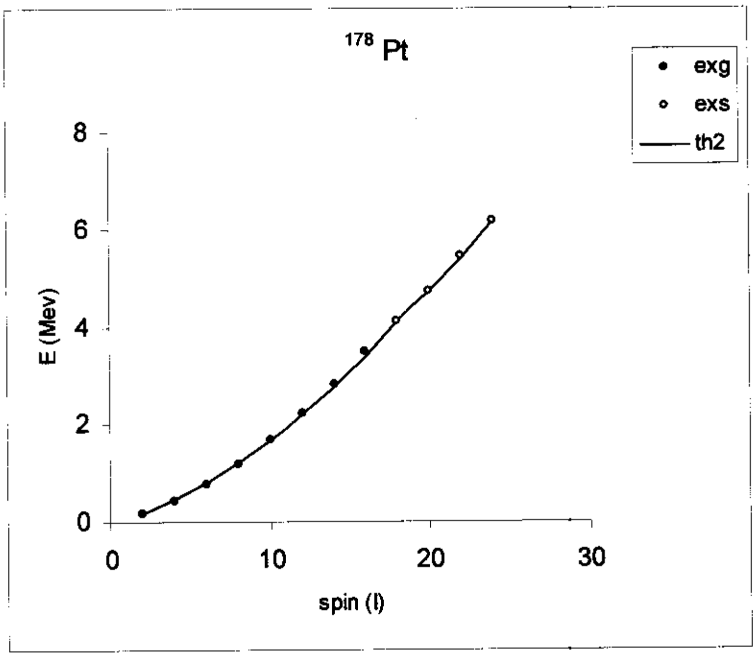

Fig.(5)

Fig. 4, 5 : Plot of the level excitation energies (yrast sequences) as a function of spin for ^{176}Pt, ^{178}Pt by (method 2).

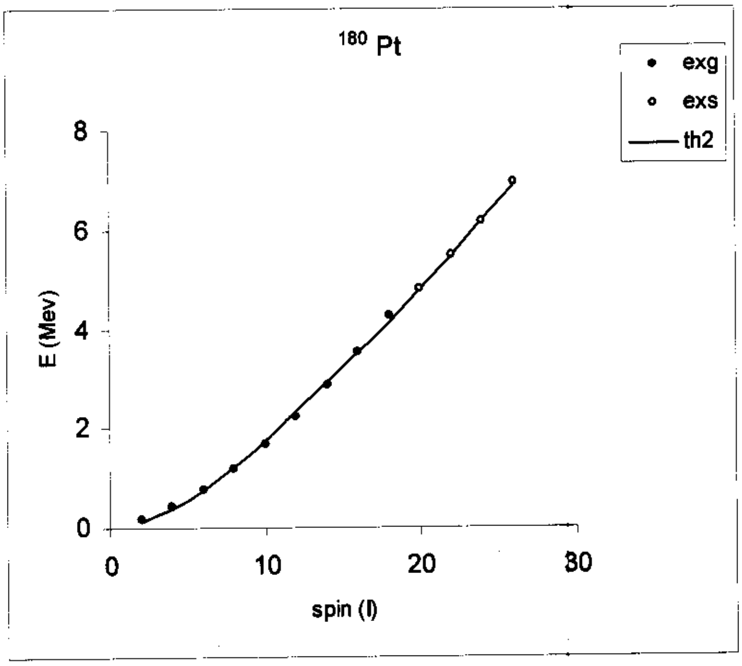

Fig.(6)

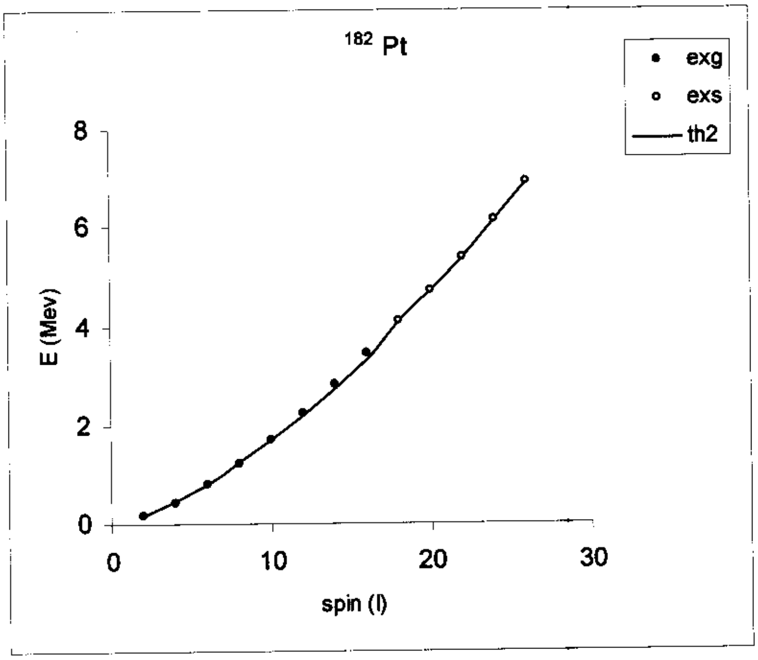

Fig.(7)

Fig. 6, 7 : Plot of the level excitation energies (yrast sequences) as a function of spin for ^{180}Pt, ^{182}Pt by (method 2).

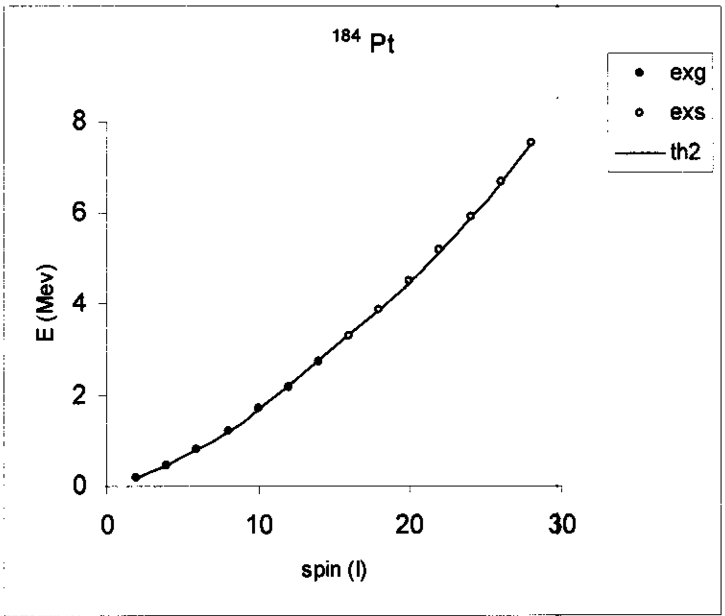

Fig.(8)

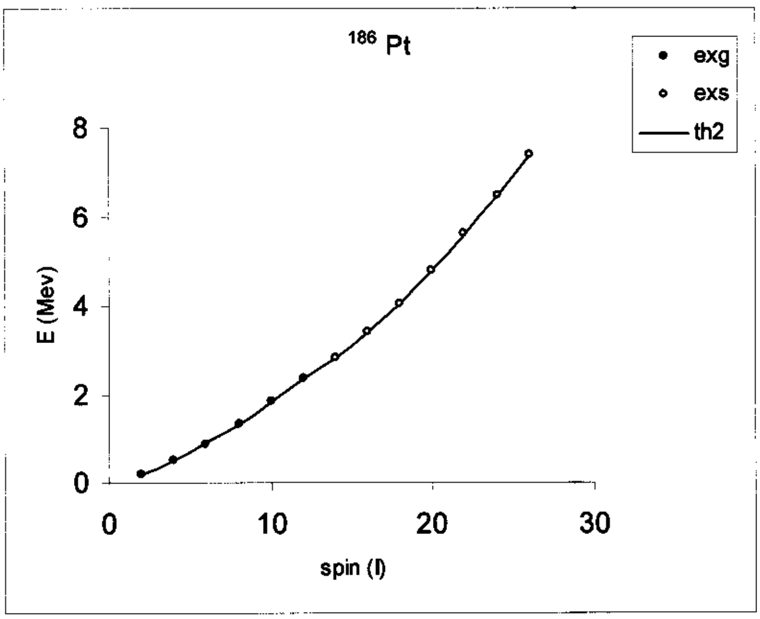

Fig.(9)

Fig. 8, 9 : Plot of the level excitation energies (yrast sequences) as a function of spin for ^{184}Pt, ^{186}Pt by (method 2).