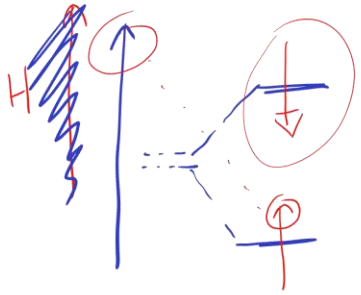


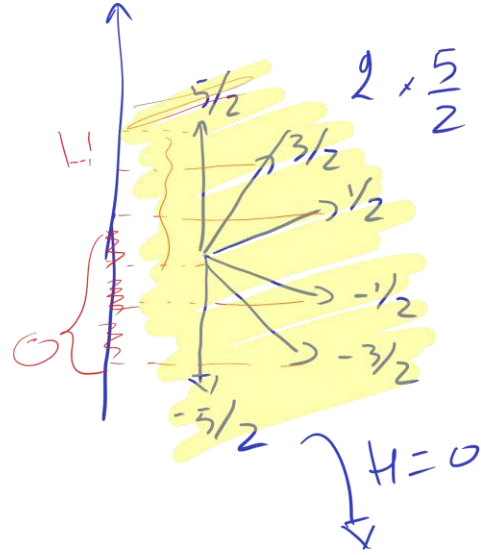
$\bar{e} : \uparrow \text{ n } \downarrow$ spin = $\pm 1/2$ 2 ενινοςρε?



$2S+1 \xrightarrow{s=1/2} (2)$

$2S+1 \xrightarrow{s=1} (3)$

$Fe^{III} \rightarrow 5 \text{ ανλ. } \bar{e}$
 $s=1/2$ } $5/2$



$2 \times \frac{5}{2} + 1 = 6$

Zeevan Effect

ΜΑΓΝΗΤΙΣΜΟΣ \Rightarrow κίνηση υλικού σωματίδιου.

1992 \rightarrow 1 bit / 1 μικρο πλάσ ευαγής Σημείο

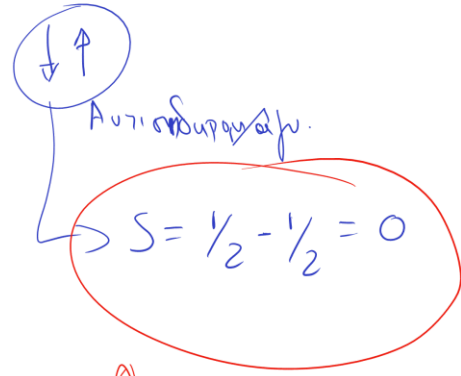
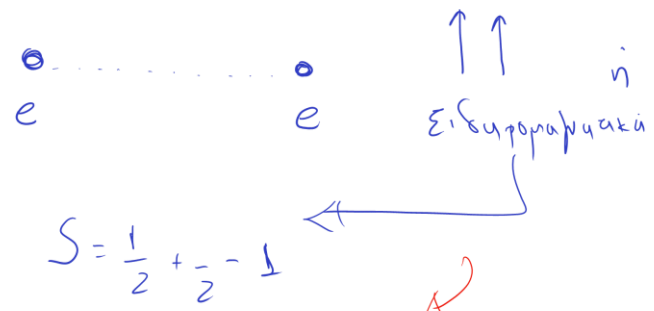
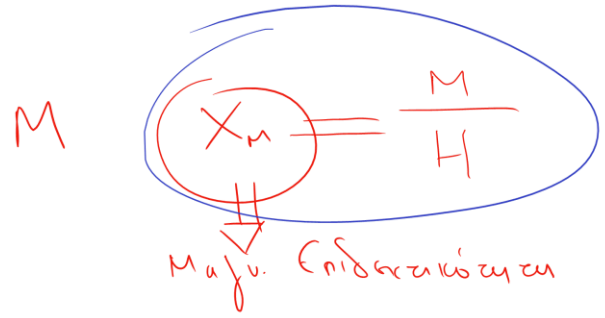
MN = 1000 gr/mol \rightarrow NA

\rightarrow 1 κοταβάν (1gr) \rightarrow $6,022 \times 10^{20}$ bi

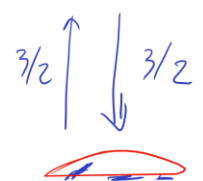
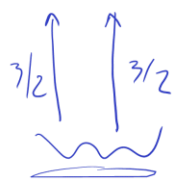
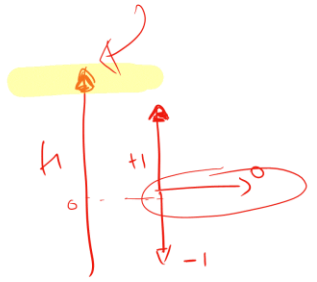
η σύνοδος

SINGLE MOLECULE MAGNETS "SMMs"

43k 30k

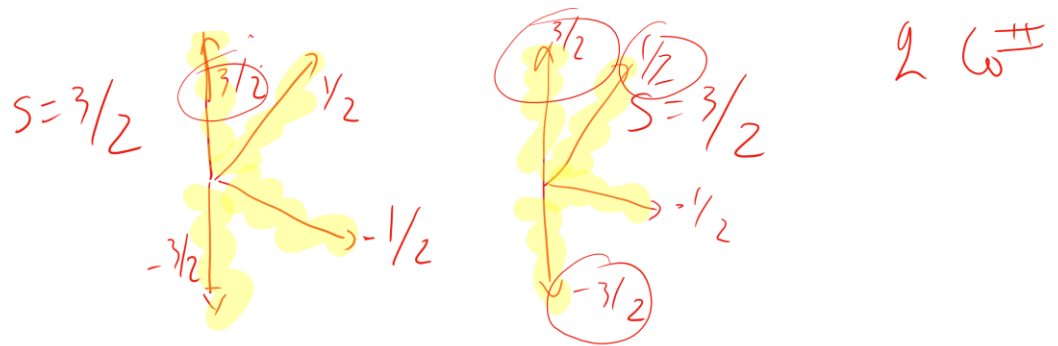


$2S + 1 =$



$$S = |S_A + S_B|, |S_A + S_B - 1|, \dots, |S_A - S_B|$$

3
2
1
0



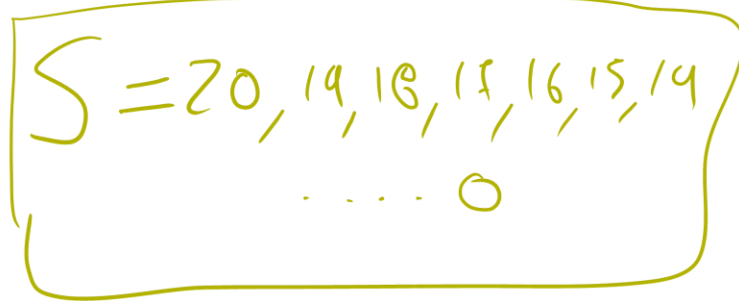
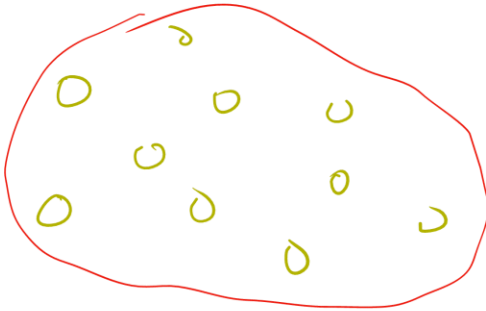
2 M_n^{II} sawl. e^- $M_n = 5/2$



$$S = 5, 4, 3, 2, 1, 0$$



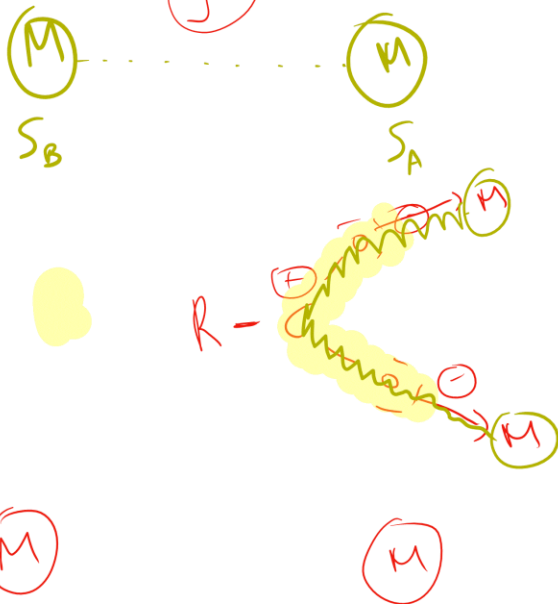
$$S = \frac{15}{2}, \frac{13}{2}, \frac{11}{2}, \frac{9}{2}, \frac{7}{2}, \frac{5}{2}, \frac{3}{2}, \frac{1}{2}$$



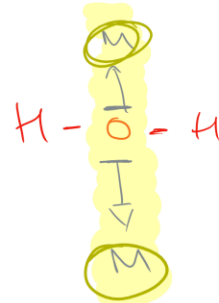
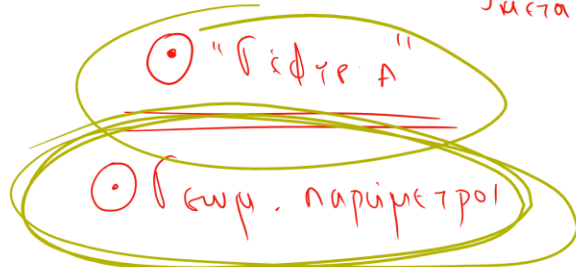
J \rightarrow παράμετρος ανταλλαγής

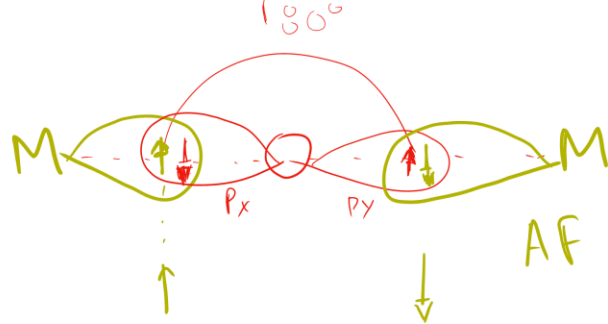
$J > 0 \Rightarrow \uparrow \uparrow$

$J < 0 \Rightarrow \uparrow \downarrow$



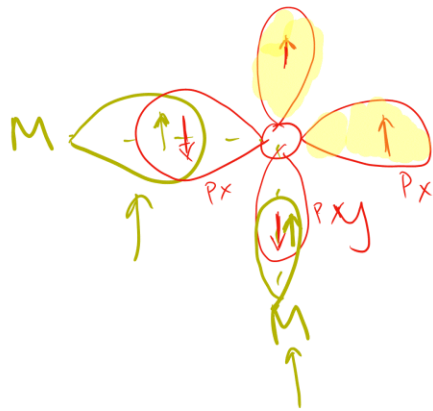
J \odot δυνάμει μεταλλών
 \ominus απίσπ. οξείδων μεταλλών





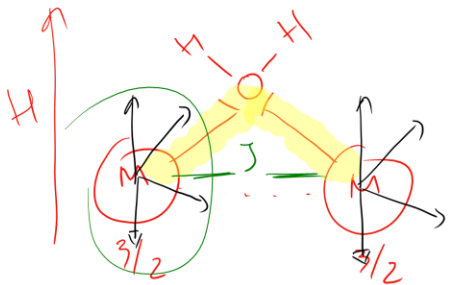
$$S = 0$$

AF (antiferro) $\uparrow \downarrow$
 antiferro. $\uparrow \downarrow$



FI (ferromagn. Interl.)
 $\uparrow \uparrow$

\textcircled{M} spin = $3/2$

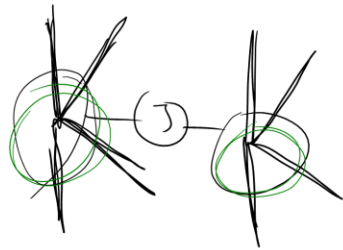


\textcircled{K} \rightarrow Θ_{CERM} (ENERGIA)

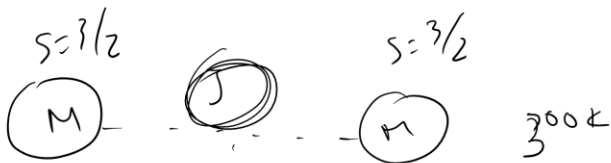
$\uparrow \uparrow$ in $\uparrow \downarrow$

$\Gamma \in S_{\text{un}}$

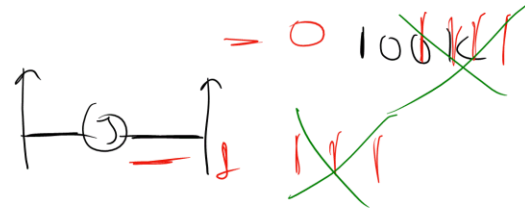
$k \uparrow \downarrow$



200k



$S = 3, 2, 1, 0$



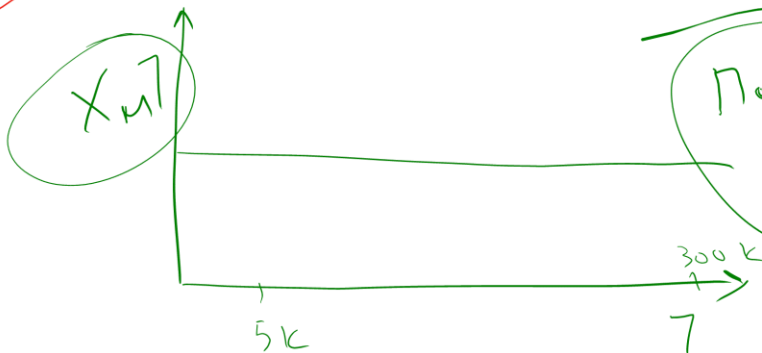
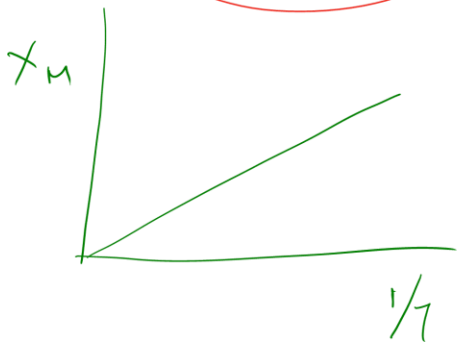
$= 3$

$S = 2$ ground-state

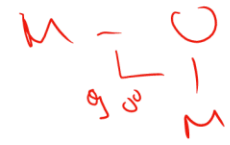
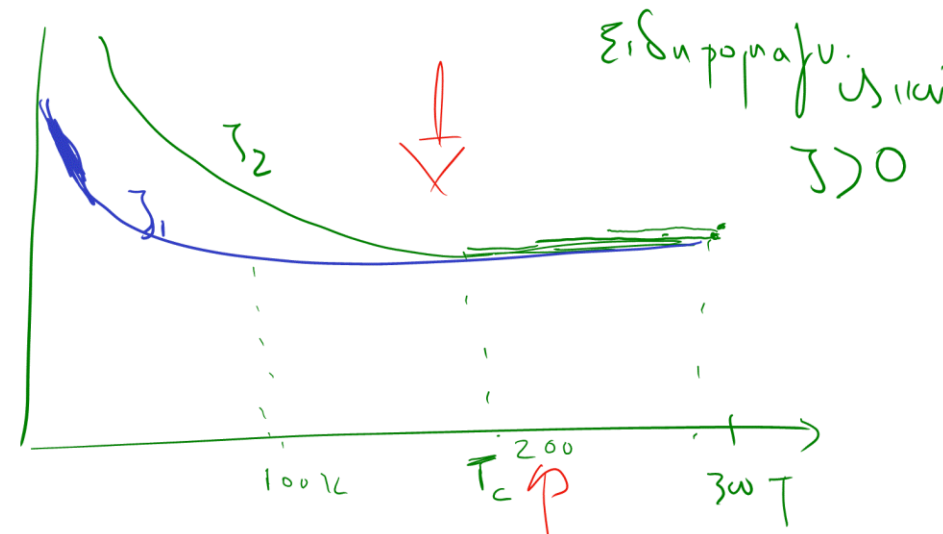
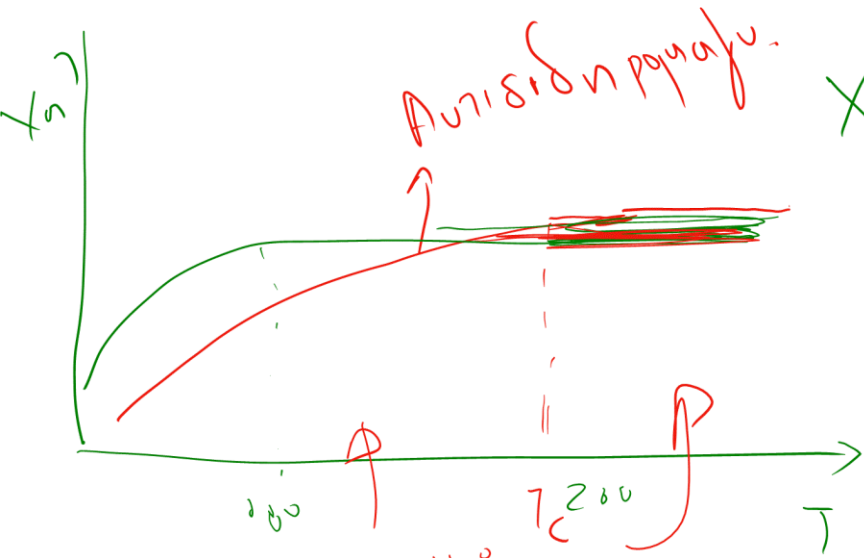
$$\chi_M = \frac{C}{T}$$

Curie

$$\chi_M T = C$$



Парамагн. діє



$$\chi_m = \frac{C}{T - \theta} \quad \text{Curie - Weiss}$$