THE EUROPEAN SCHOOL ON

MAGNETISM

Concept tests

Leon Abelmann

THE EUROPEAN SCHOOL ON MAGNETISM

The H field
Spontaneous magnetisation
Direct exchange

Leon Abelmann

To increase the field far away from a permanent magnet I can increase:

A (red) : magnetisation at constant volume

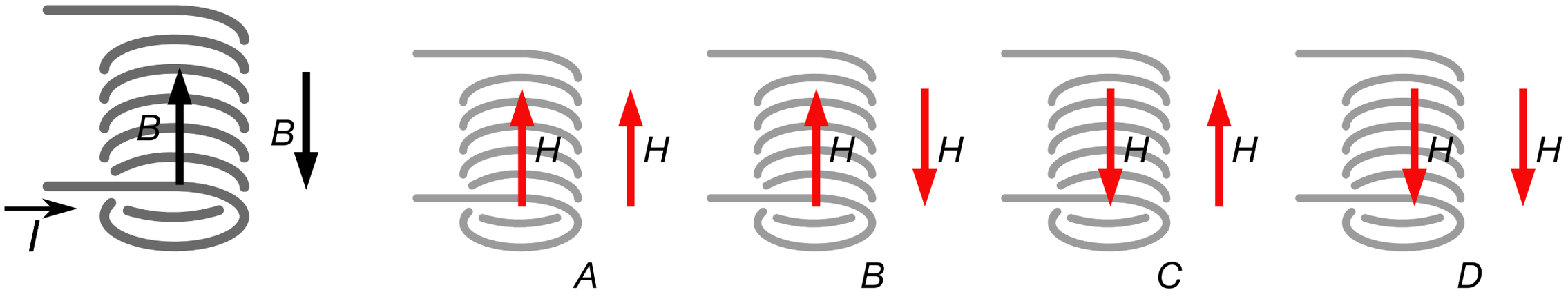
B (blue) : volume at constant moment

C (green) : moment at constant magnetisation

D (orange) : magnetisation at constant moment

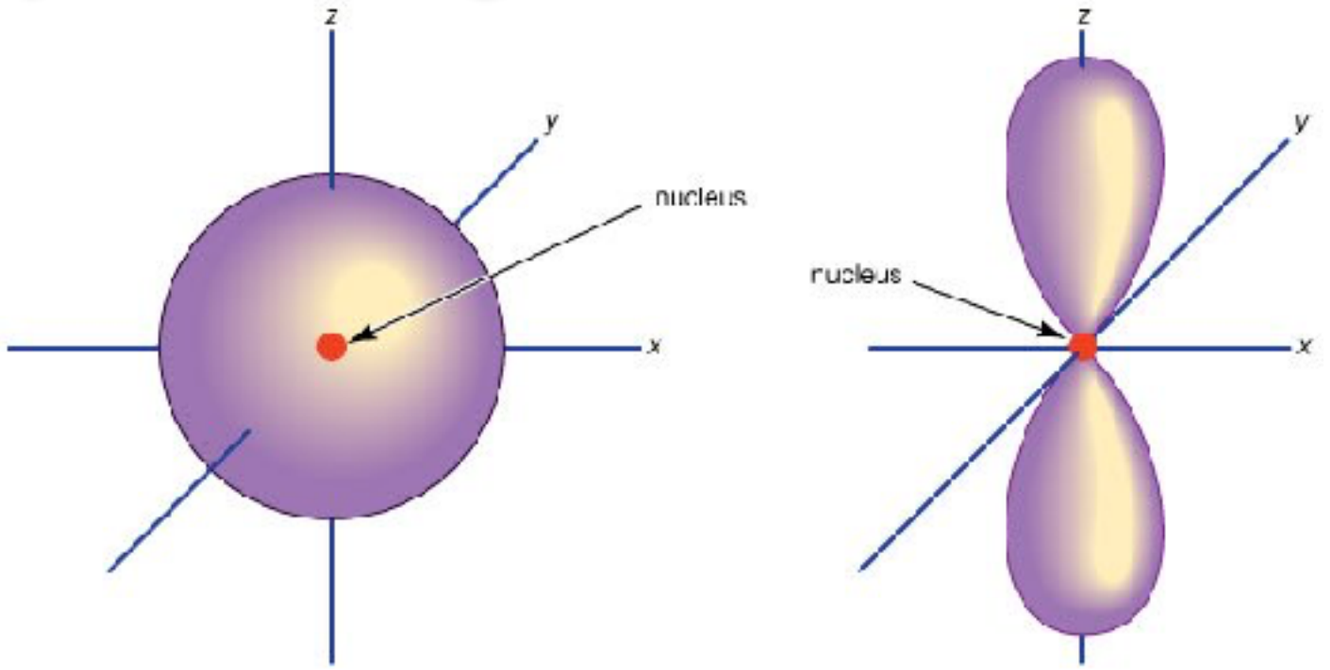
Multiple answers possible

R



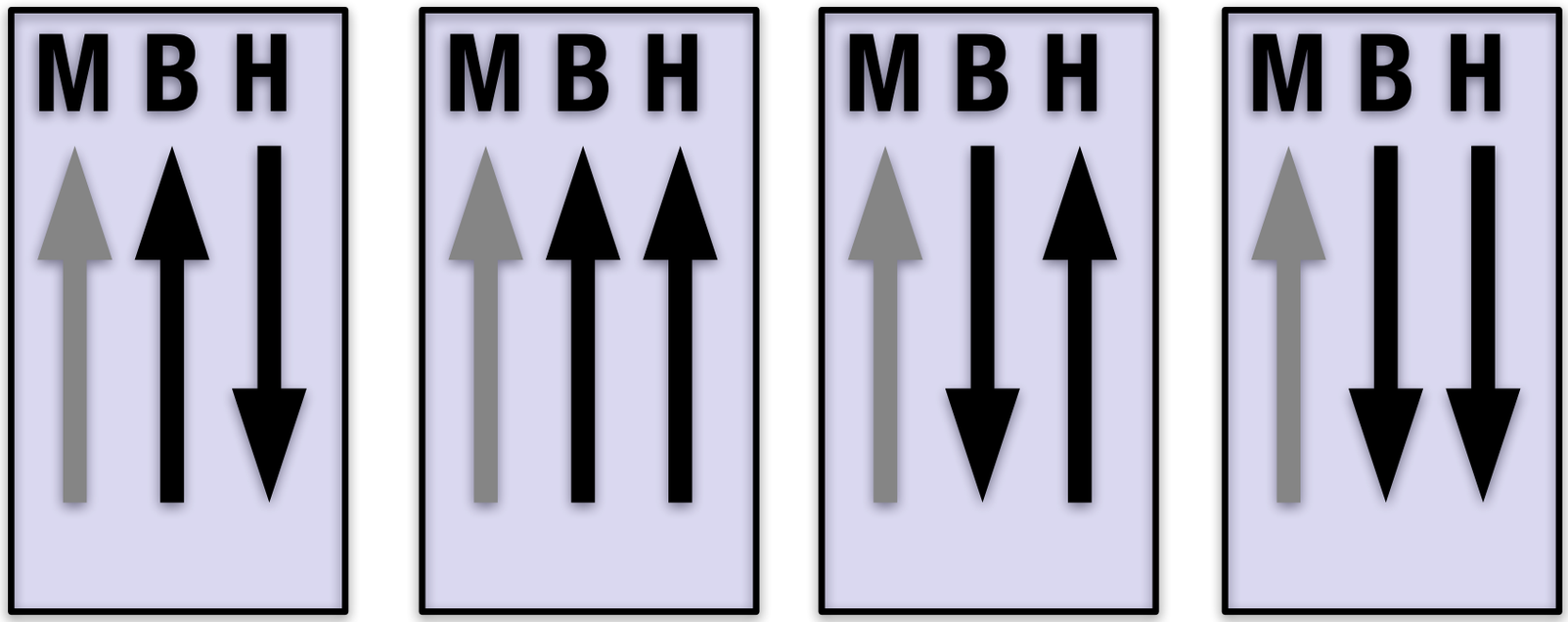
(red) (blue) (green) (orange)

Probability of finding the electron in the nucleus

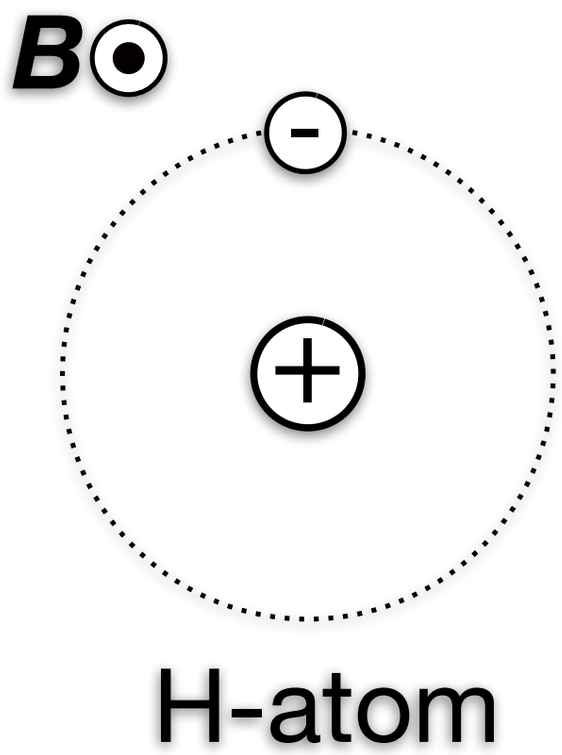


A (red)	:	0	0
B (blue)	:	0	Minimum
C (green)	:	Maximum	0
D (orange)	:	Maximum	Minimum

Uniformly magnetised bar magnet



A (red) B (blue) C (green) D (orange)



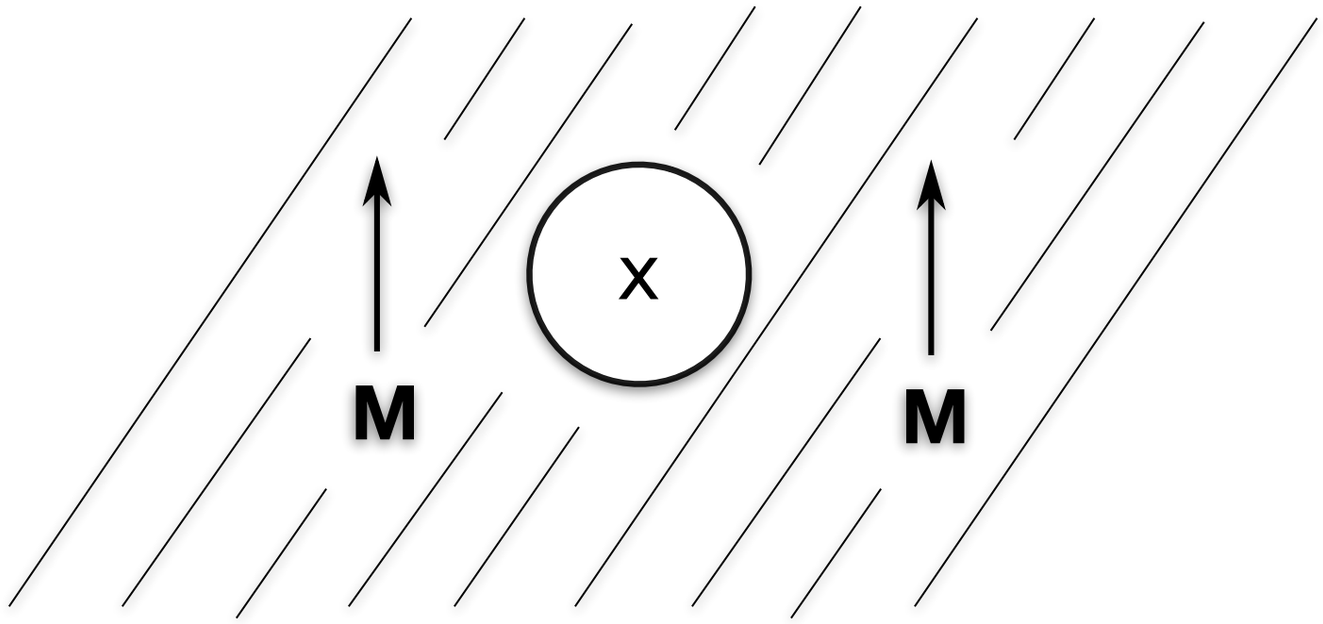
H-atom

orbital moment

A (red) ⊙ (pointing at you)

B (blue) ⊗ (pointing from you)

C (green) 0



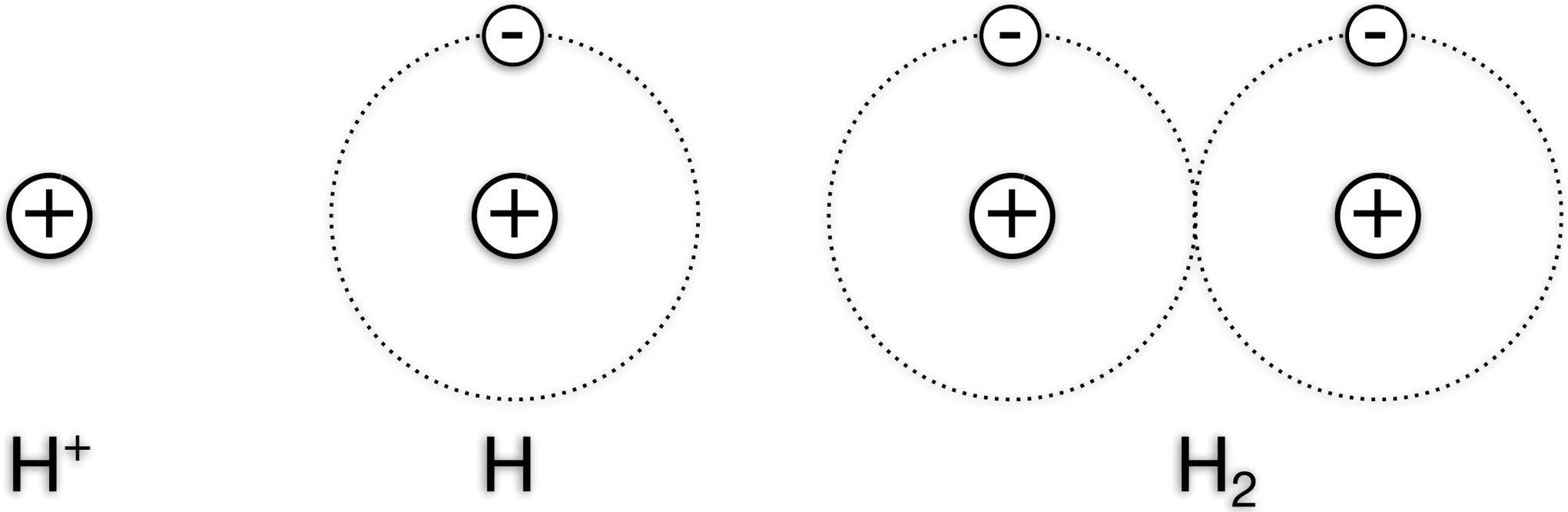
Hole in a permanent magnet with magnetisation ***M***

A (red) : ***H*** in ***x*** is parallel to ***M***

B (blue) : ***H*** in ***x*** is anti-parallel to ***M***

C (green) : $H = 0$

C



A (red) : $m_{H^+} \geq m_H$

B (blue) : $m_{H^+} \geq m_{H_2}$

C (green) : $m_H \geq m_{H_2}$

Hunds rule:

Mn: [Ar] $3d^5\ 4s^2$

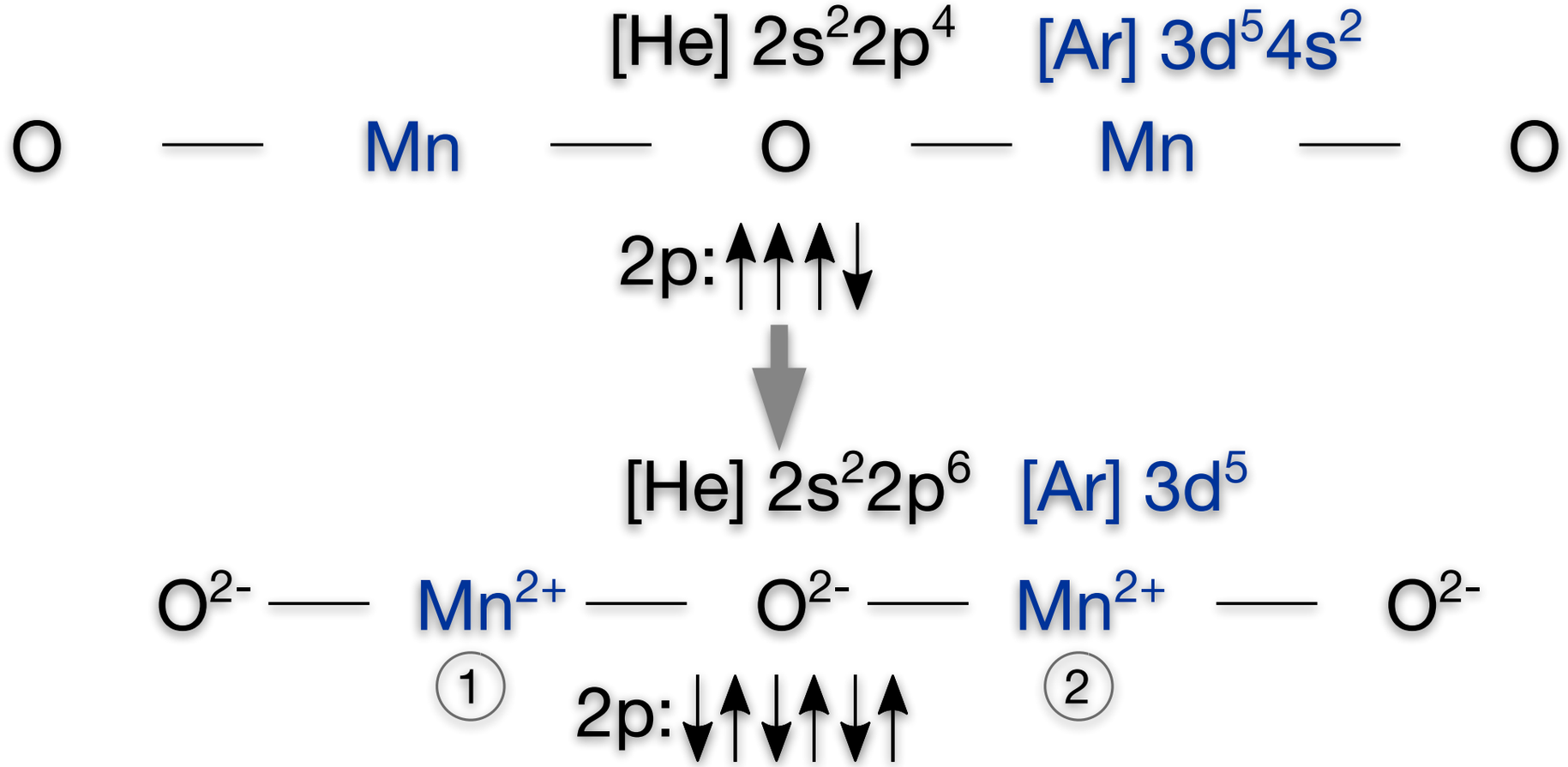
Fe: [Ar] $3d^6\ 4s^2$

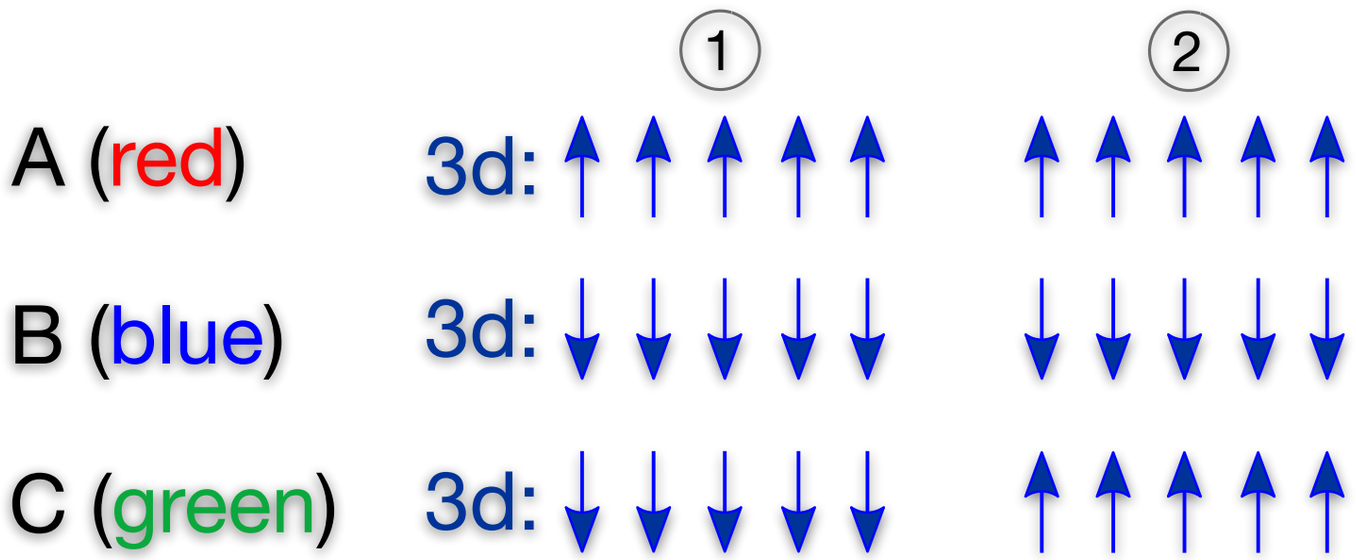
Co: [Ar] $3d^7\ 4s^2$

Ionized Fe:

A (red)	Fe^{2+}: [Ar] $3d^4\ 4s^2$
B (blue)	Fe^{2+}: [Ar] $3d^5\ 4s^1$
C (green)	Fe^{2+}: [Ar] $3d^6\ 4s^0$
D (orange)	None of the above

G


[He] 2s²2p⁴
[Ar] 3d⁵4s²
O — Mn — O — Mn — O
2p:
[He] 2s²2p⁶
[Ar] 3d⁵
O²⁻ — Mn²⁺ — O²⁻ — Mn²⁺ — O²⁻
1
2
2p:


1
2
A (red)
3d:
B (blue)
3d:
C (green)
3d: