Glossary of electron waves in atoms

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This glossary collects the terminology we are using in lectures and clarifies that used in Mahaffy et al., 2e, table 8.8 on page 279.

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Electron waves and electron clouds

Notes on the hydrogen atom electron waves (wave functions) and electron clouds (probability densities)

Hydrogen atom family album
http://goo.gl/XPkcxv

electron waves = wave functions = orbitals

electron cloud = probability density

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Shells

The principle quantum number *n* determines the shell.

n = 1 is the **K shell**
n = 2 is the **L shell**
n = 3 is the **M shell**

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Subshells

For a given shell, the subshells consists of the orbitals for each possible *l* value.

K shell has one subshell: 1s
L shell has two subshells: 2s and 2p
M shell has three subshells: 3s, 3p and 3d

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Orbitals

The number of m values determine the number of orbitals.

s subshells one m for $l = 0$, so one s orbital:
s $m = 0$

p subshells three m's for $l = 1$, so three p orbitals:
p_z $m = 0$,
p_y and p_x , each composed of $m = \pm 1$

d subshells five m's for $l = 2$, so five d orbitals:
d_{z2} $m = 0$;
d_{yz} and d_{zx} , each composed of $m = \pm 1$
d_{xy} and d_{x2-y2} , each composed of $m = \pm 2$

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