



# Professional 1-1 Chemistry Tuition

- Online
- Worthing
- Brighton

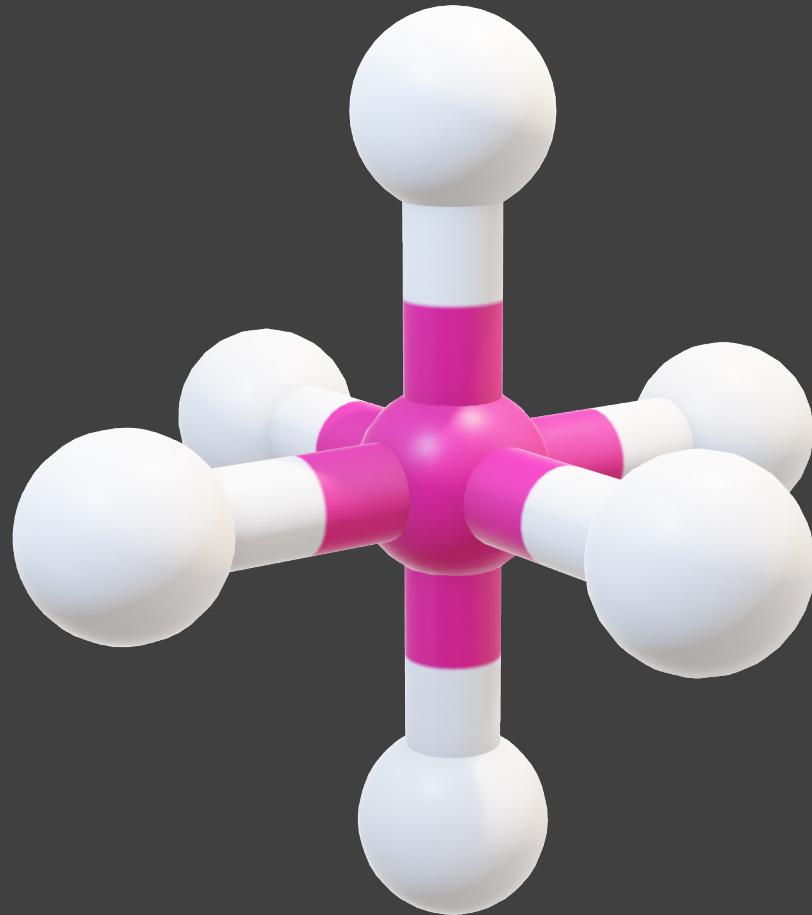
ChemistryTuition.Net

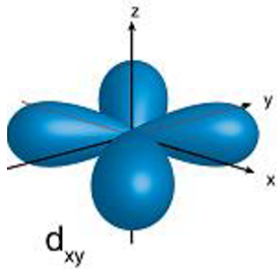
Dr Simon Orchard

## Hybridisation of atomic orbitals in $SF_6$ and $PCl_5$

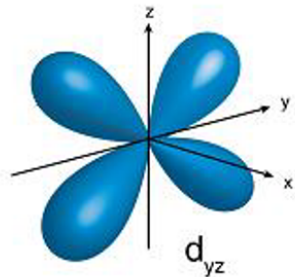
These slides may be downloaded at <https://www.chemistrytuition.net/>

$SF_6$

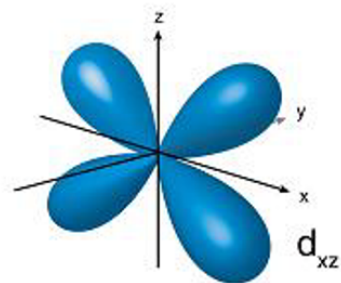




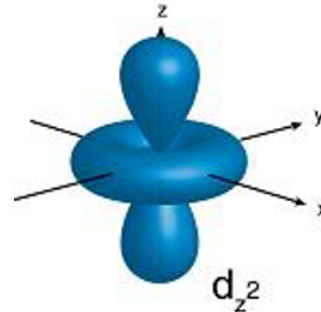
**$3d_{xy}$**



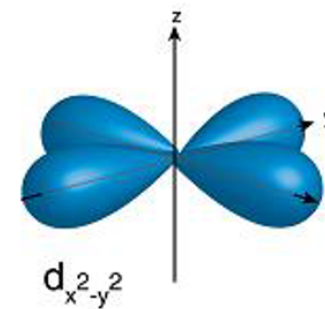
**$3d_{yz}$**



**$3d_{xz}$**



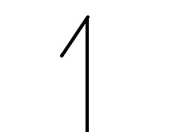
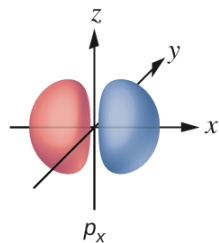
**$3d_{z^2}$**



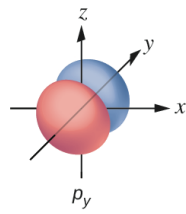
**$3d_{x^2-y^2}$**



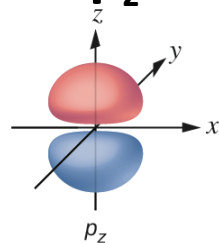
**$3p_x$**



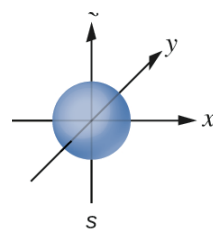
**$3p_y$**



**$3p_z$**

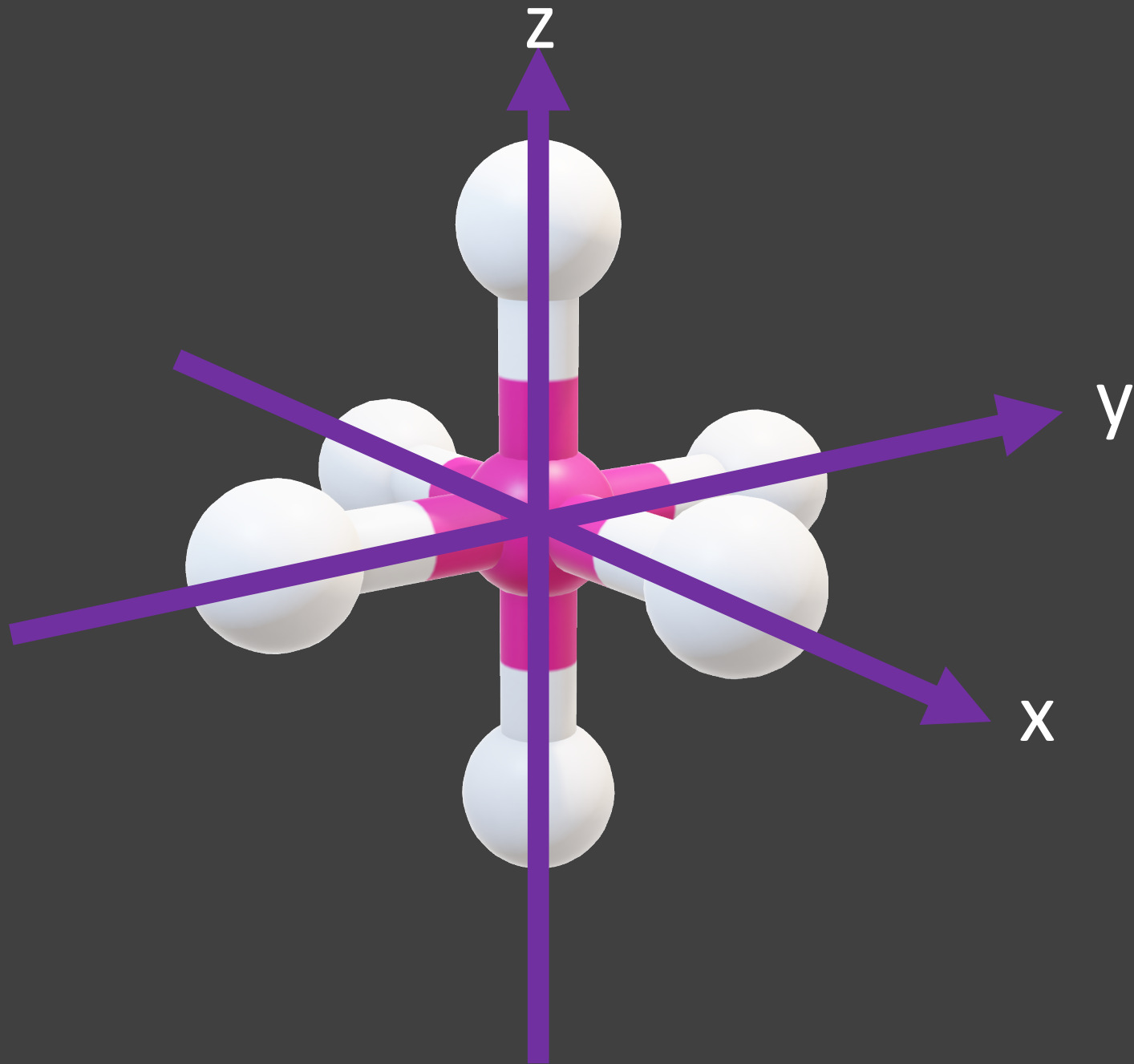


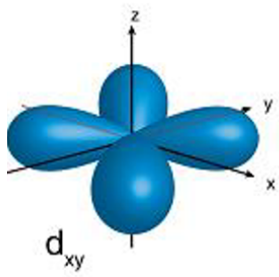
**$3s$**



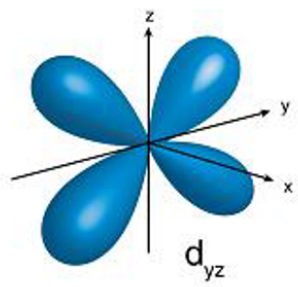
**Sulphur –  $3s^2 3p^4$**

$SF_6$

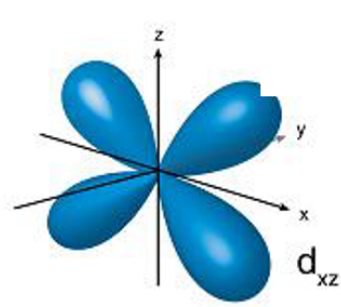




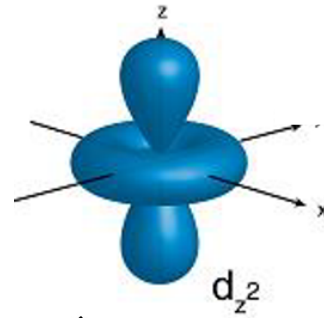
**$3d_{xy}$**



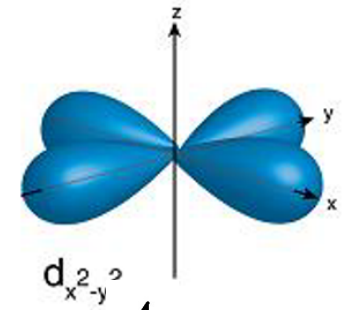
**$3d_{yz}$**



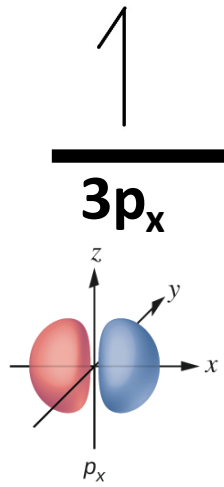
**$3d_{xz}$**



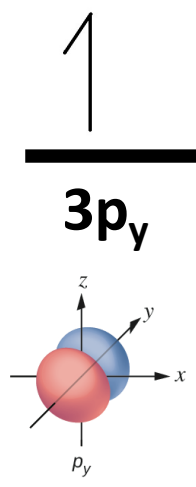
**$3d_{z^2}$**



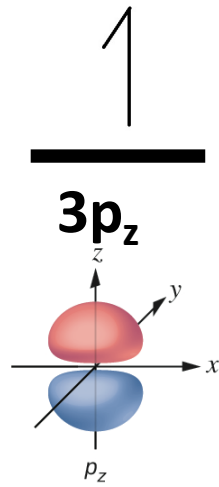
**$3d_{x^2-y^2}$**



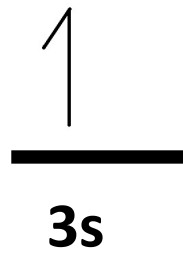
**$3p_x$**



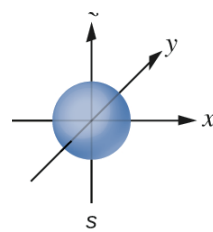
**$3p_y$**



**$3p_z$**

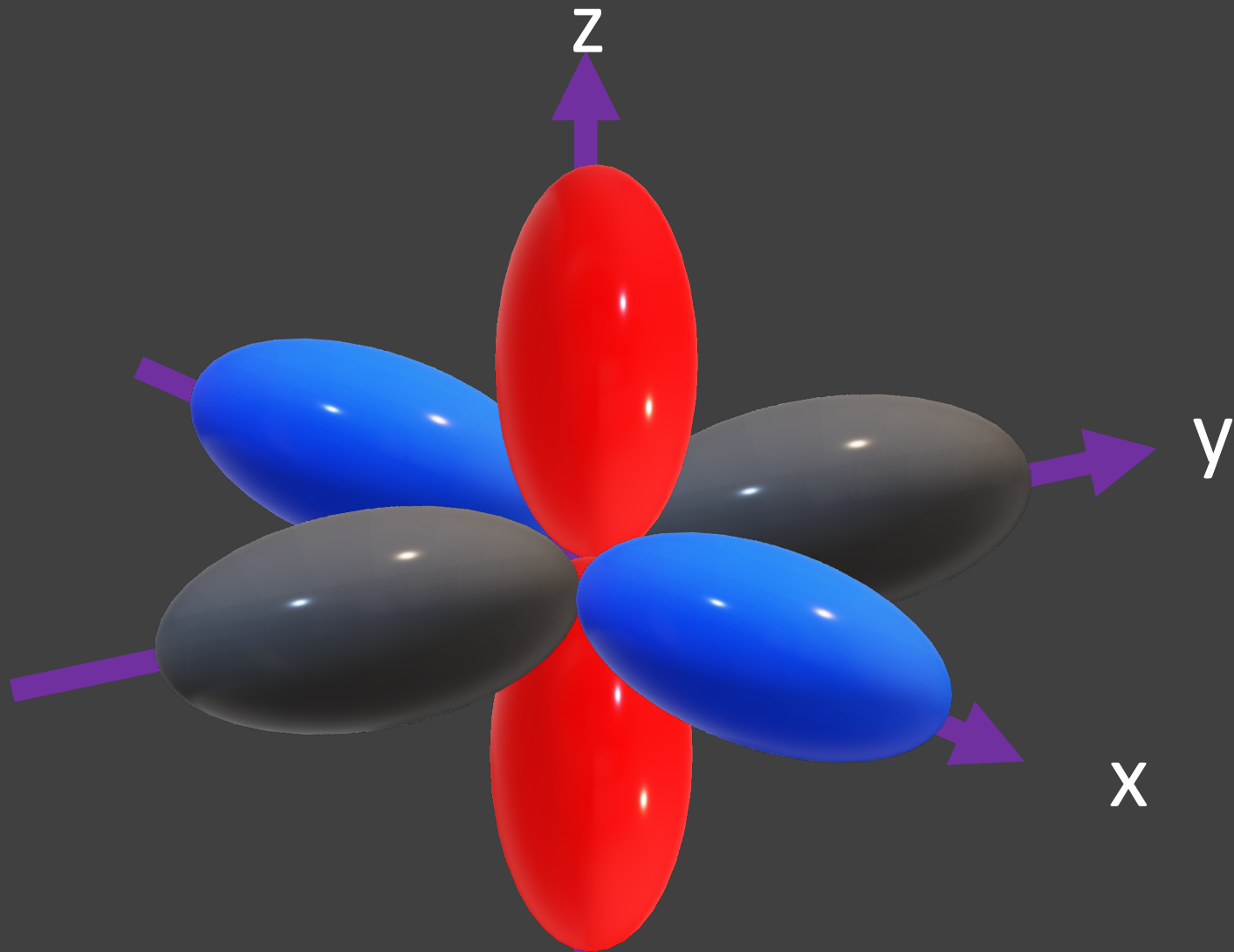


**$3s$**



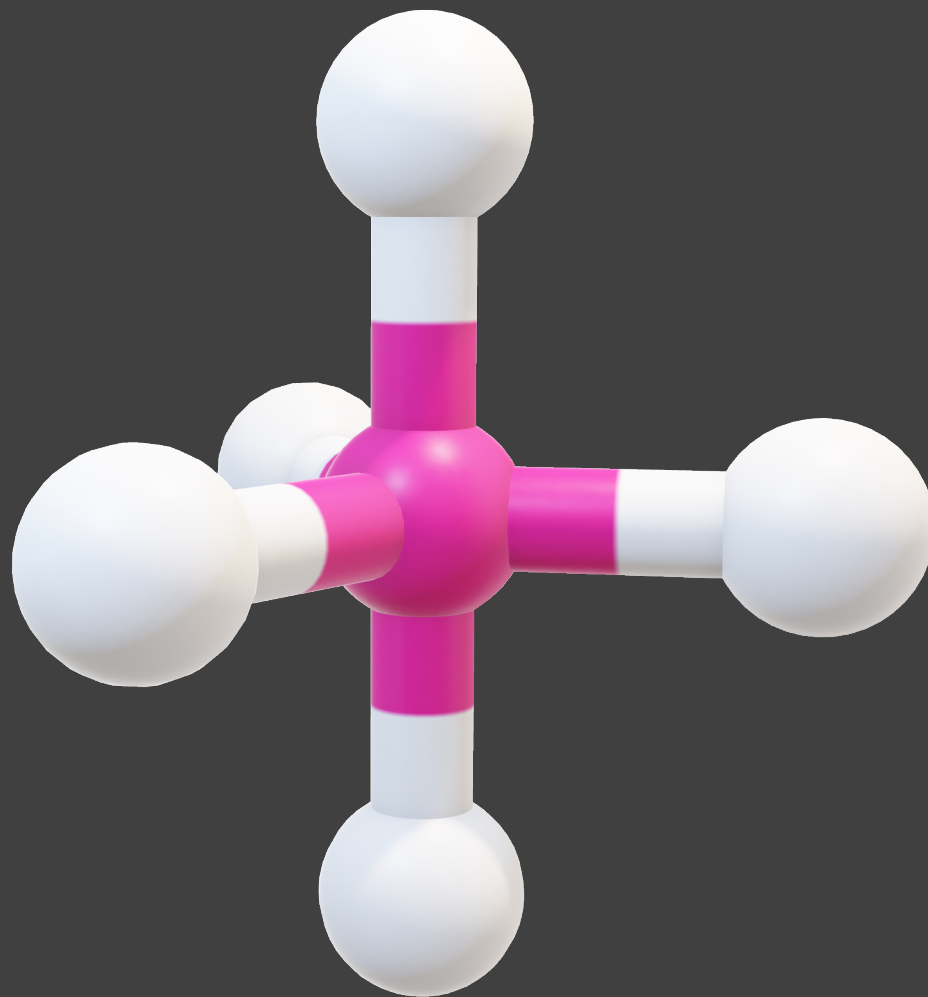
**$s$**

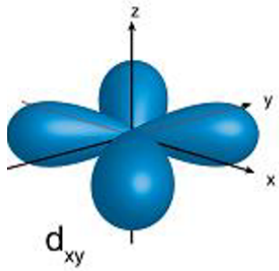
**Sulphur –  $3s^1 3p^3 3d^2$**



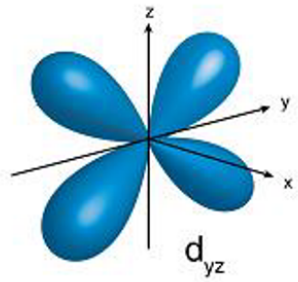
$sp^3d^2$  hybrid orbitals

$\text{PCl}_5$

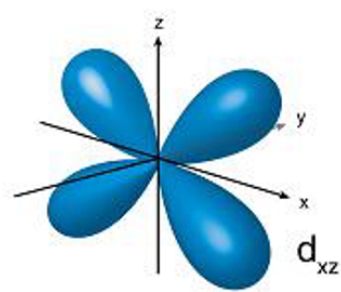




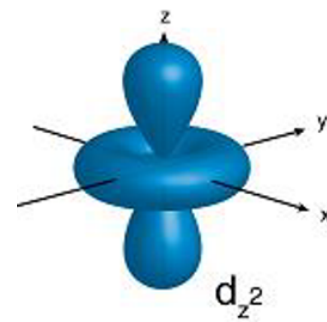
**$3d_{xy}$**



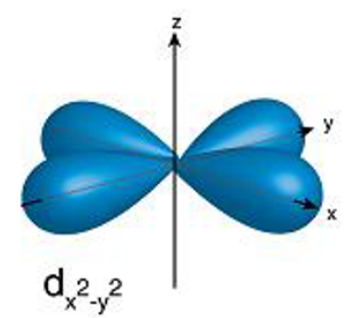
**$3d_{yz}$**



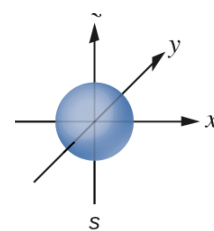
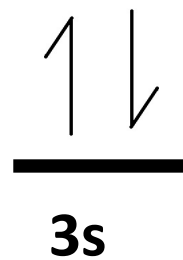
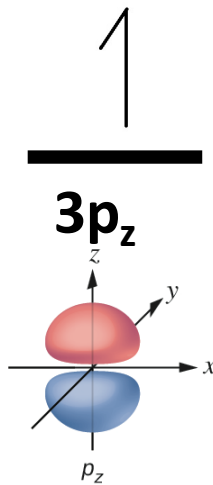
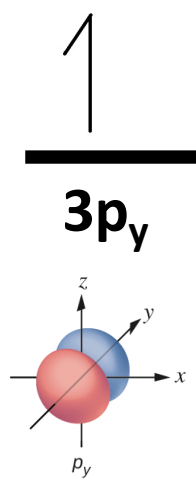
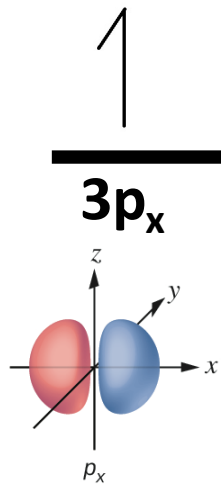
**$3d_{xz}$**



**$3d_{z^2}$**



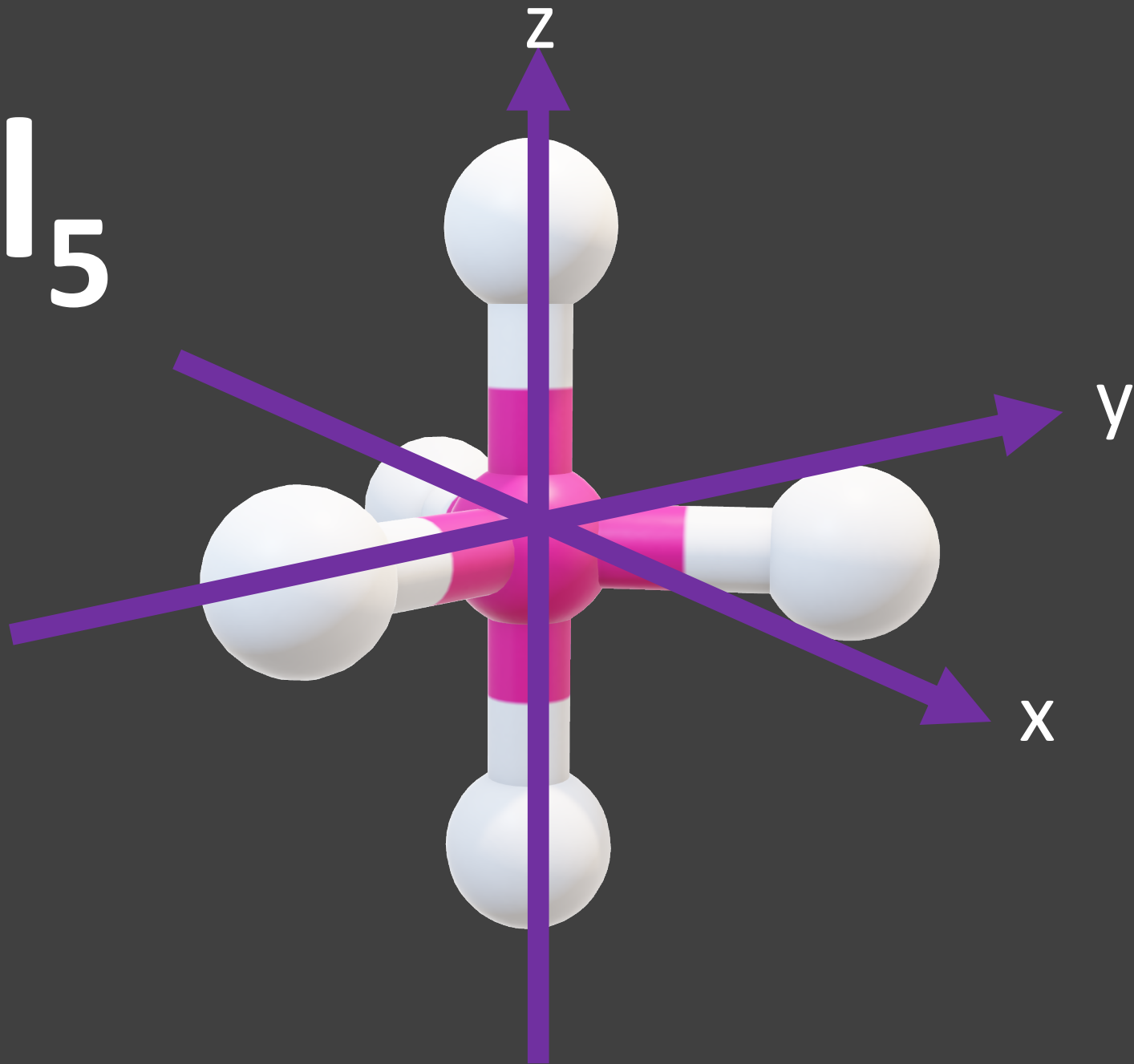
**$3d_{x^2-y^2}$**

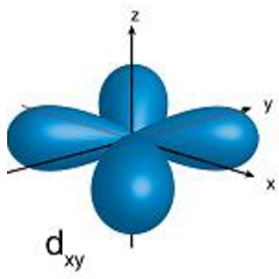


**Phosphorus –  $3s^2 3p^3$**

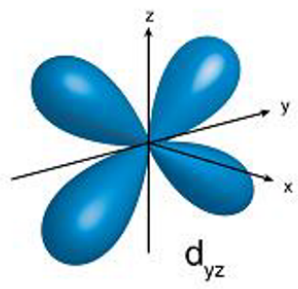


$\text{PCl}_5$

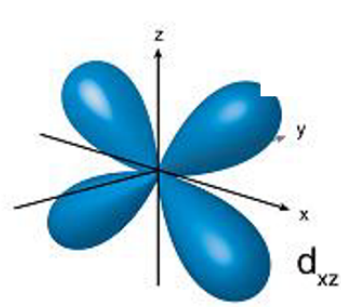




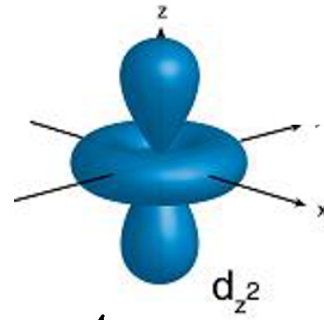
**$3d_{xy}$**



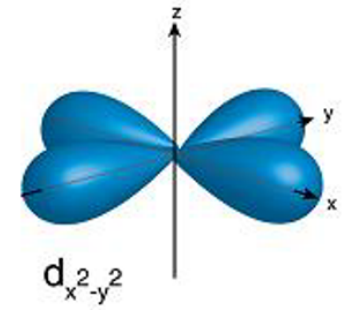
**$3d_{yz}$**



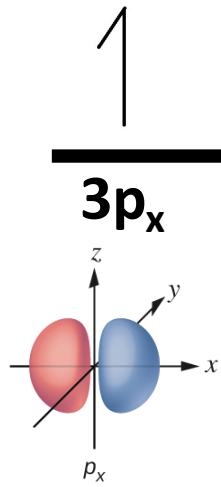
**$3d_{xz}$**



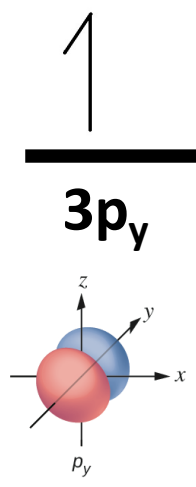
**$3d_{z^2}$**



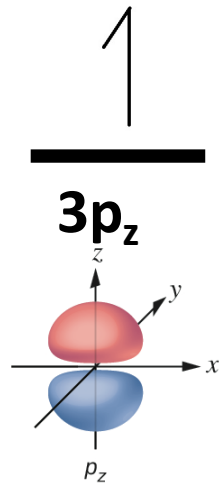
**$3d_{x^2-y^2}$**



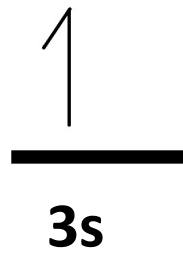
**$3p_x$**



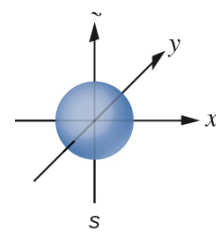
**$3p_y$**



**$3p_z$**

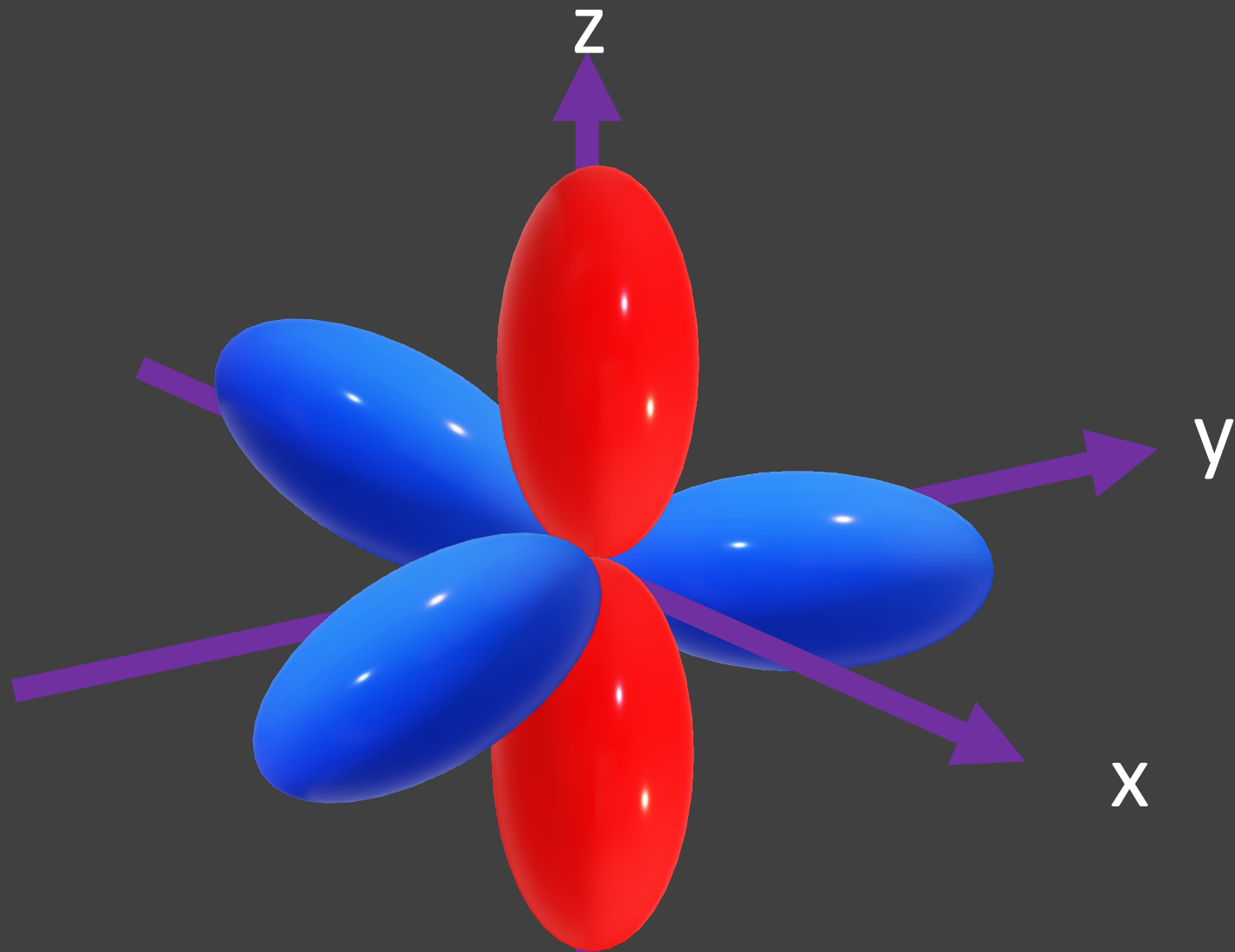


**$3s$**



**$s$**

**Phosphorus –  $3s^1 3p^3 3d^1$**



$sp^3d$  hybrid orbitals



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Dr Simon Orchard