An excited-state atom is an atom in which the total energy of the electrons can be lowered by transferring one or more electrons to different orbitals. That is, in an excited-state atom not all electrons are in the lowest possible energy levels.

eg. Consider a carbon atom whose electron configuration is the following.

\[
\begin{array}{ccc}
1s & 2s & 2p \\
\uparrow \downarrow & \uparrow & \uparrow \uparrow \uparrow \uparrow
\end{array}
\]

The total energy of the electrons in this carbon atom can be lowered by transferring an electron from a 2P orbital to the 2S orbital. Therefore, this carbon atom is an excited-state carbon atom.

\[
\begin{array}{ccc}
1s & 2s & 2p \\
\downarrow \uparrow \uparrow \uparrow \uparrow & \uparrow \uparrow & \uparrow \uparrow \uparrow \uparrow
\end{array}
\]

see also ground-state atom

Contributors

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