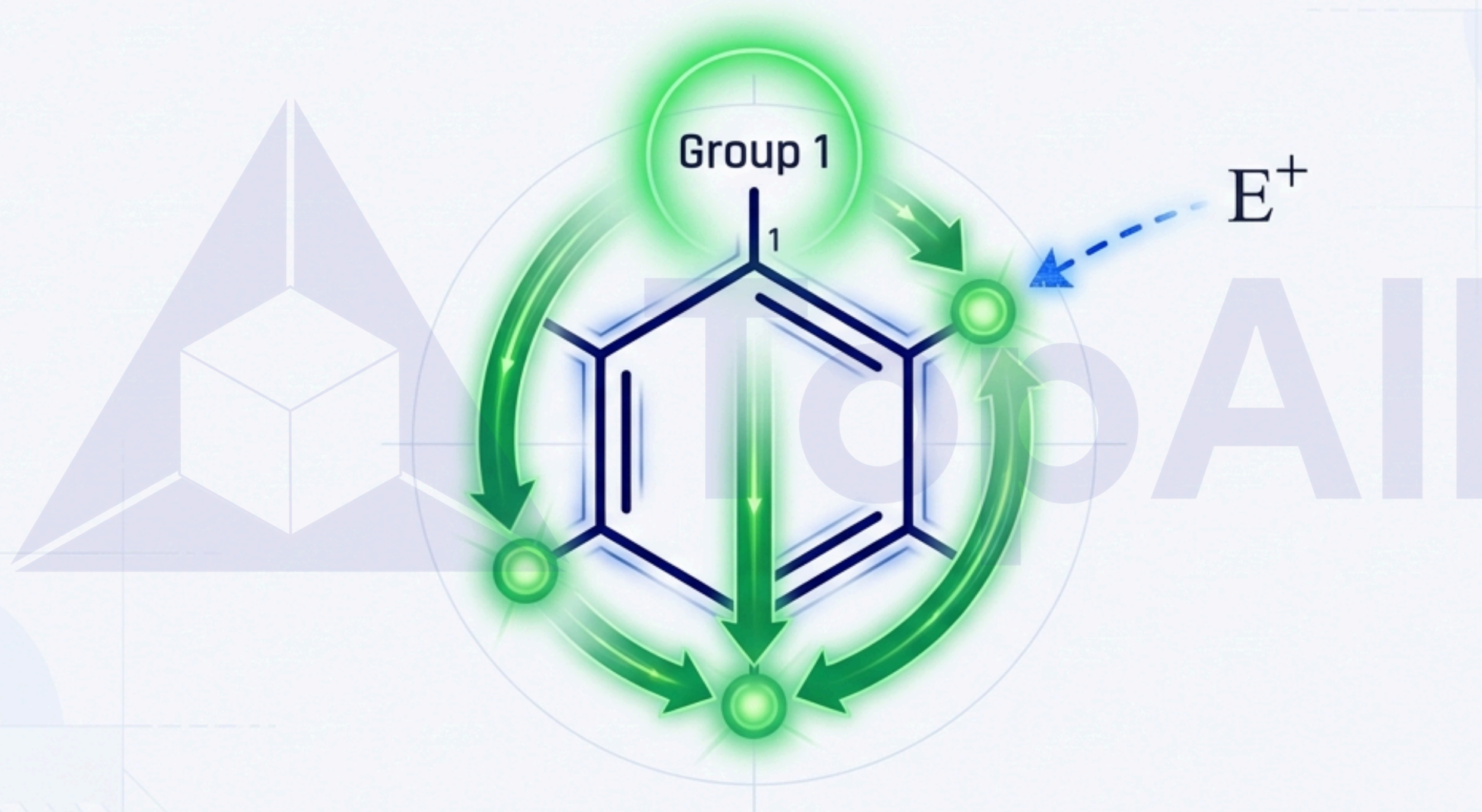


Directive Influence in Monosubstituted Benzene



THE FIRST GROUP DECIDES WHERE THE SECOND ONE GOES

Two Separate Questions

Do not confuse speed with geometry.

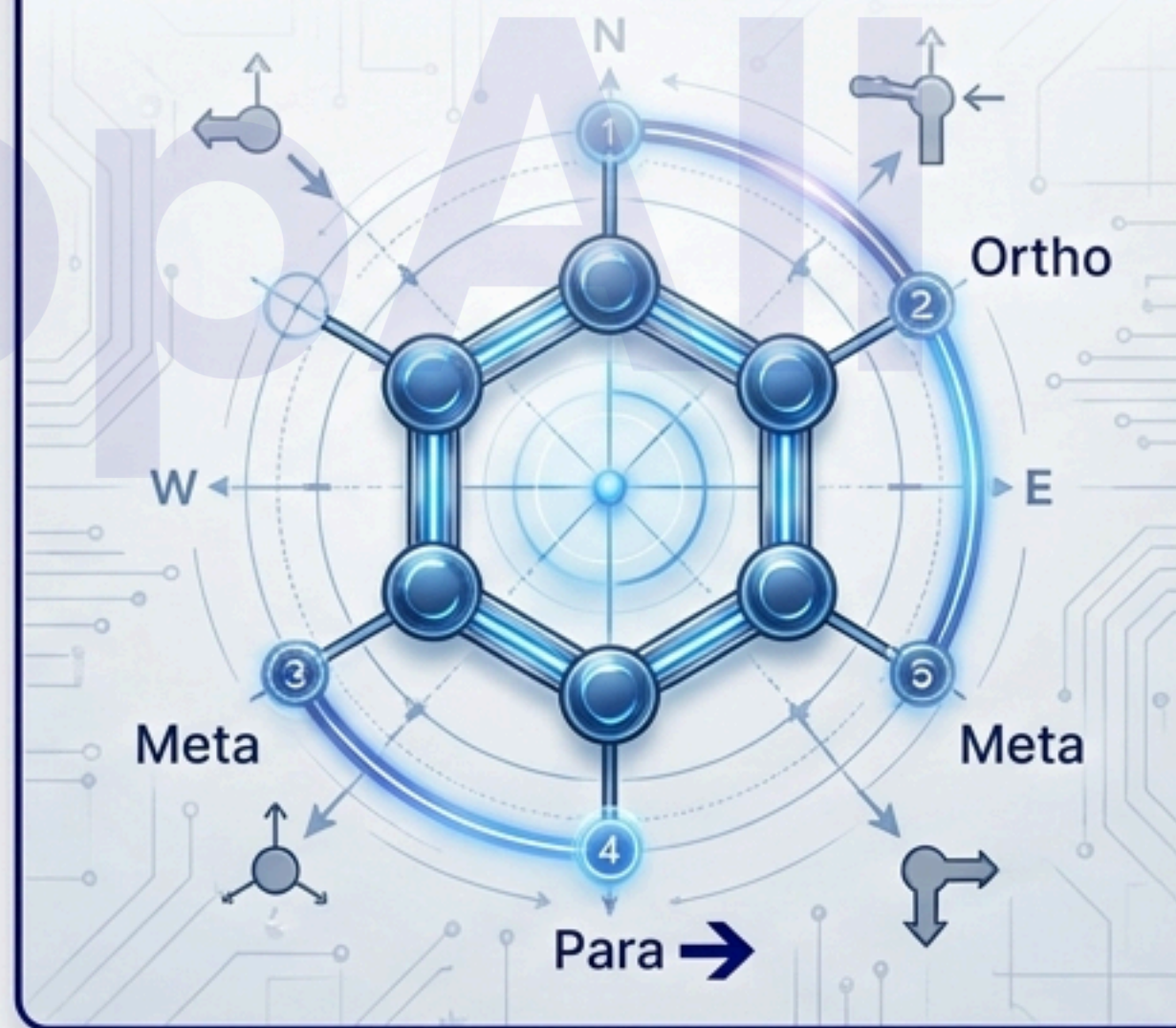
Activation / Deactivation

How fast does the ring react compared to bare benzene? (Kinetics)



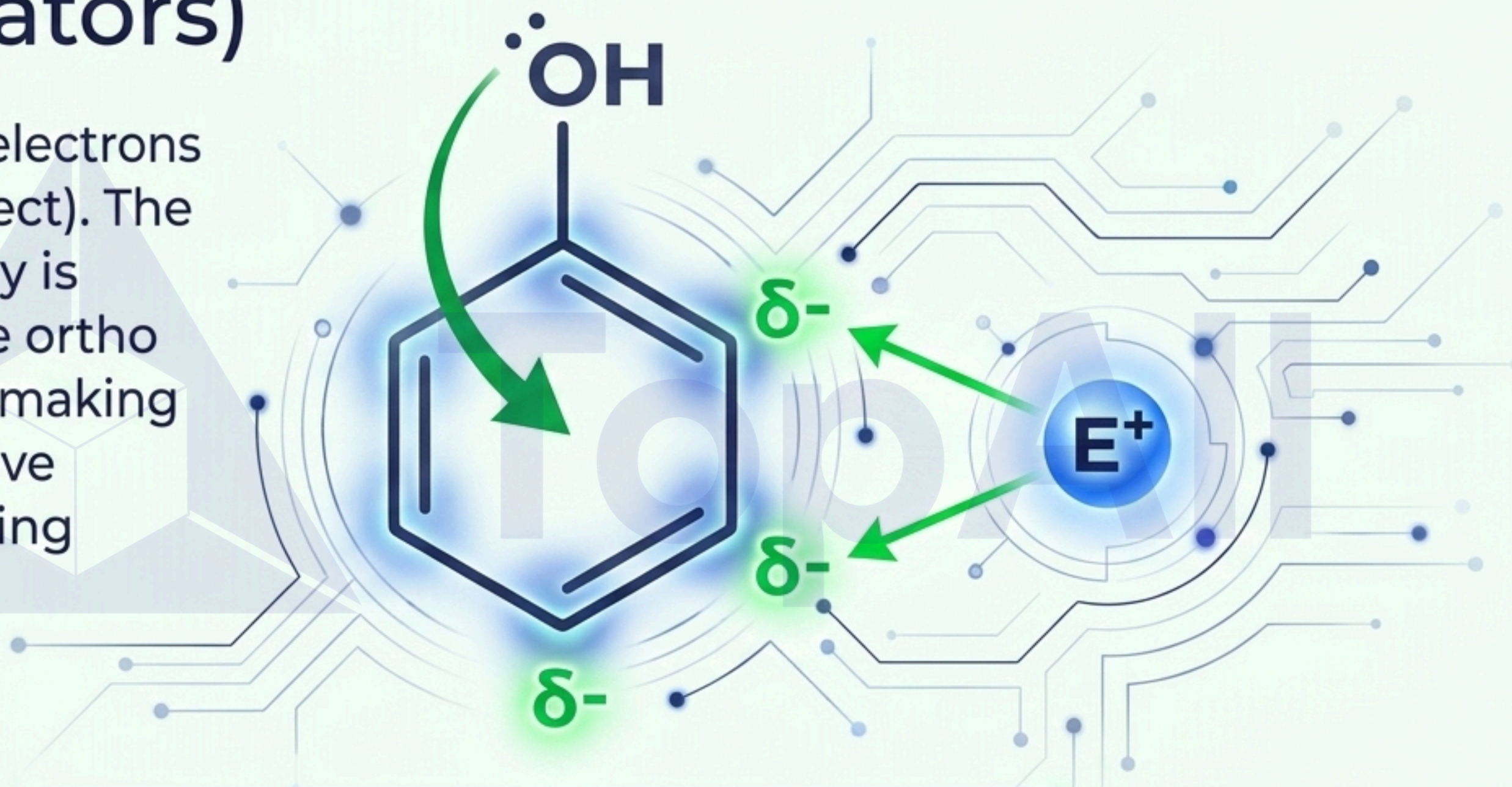
Orientation

Where exactly does the next group enter? (Geometry)



Ortho/Para Directors (The Activators)

Resonance pushes electrons into the ring (+R effect). The electron density is concentrated at the ortho and para positions, making them highly attractive to incoming electrophiles.



Common Activators:

$-\text{OH}$, $-\text{NH}_2$, $-\text{CH}_3$, $-\text{OCH}_3$



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$$E=mc^2$$



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Key Highlights

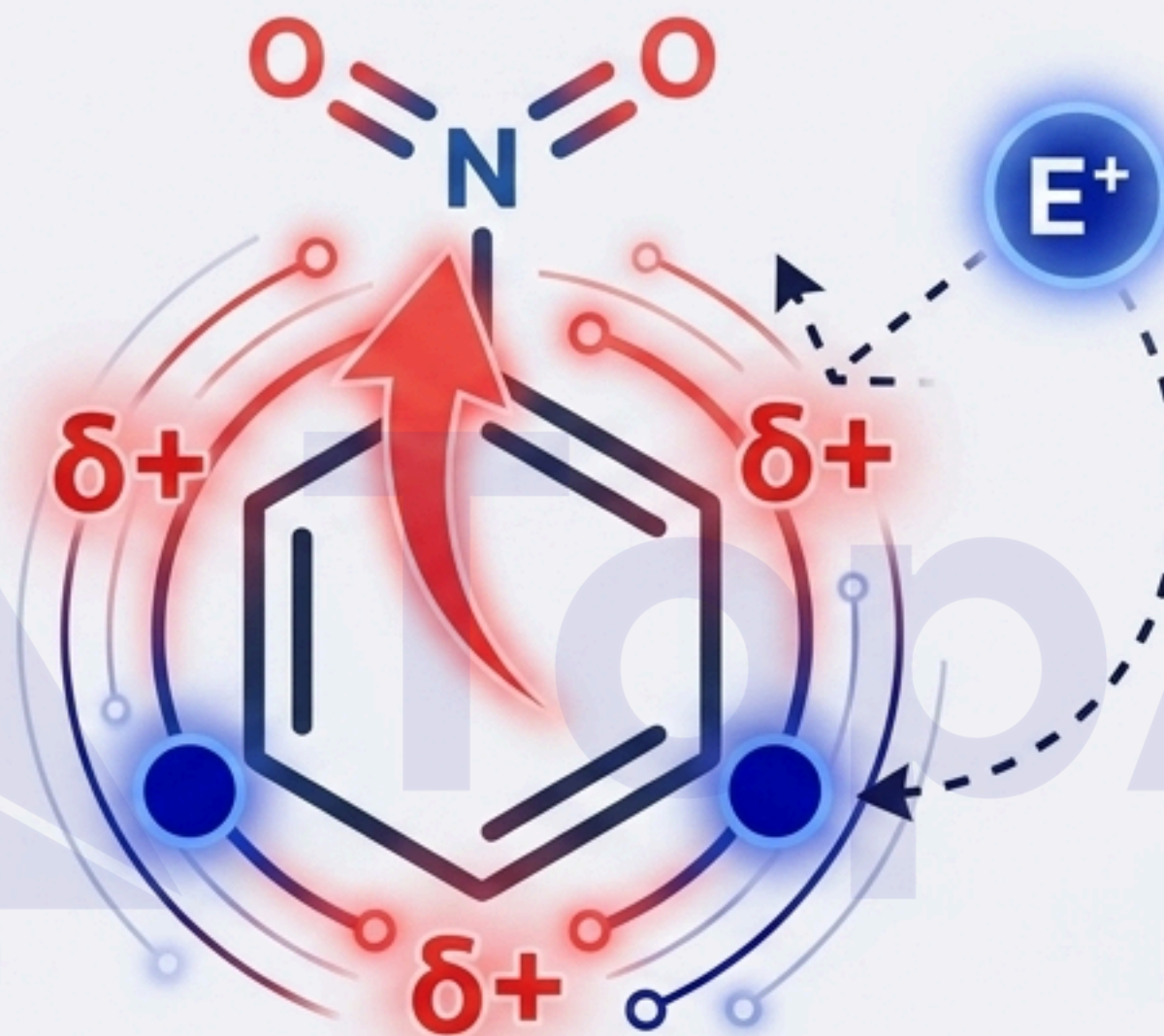
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Meta Directors (The Deactivators)

The group pulls electrons out of the ring (-I, -R effects).

Because ortho and para positions become positively charged, the electrophile is forced to attack the **comparatively "safe" meta position**.



Common Deactivators:

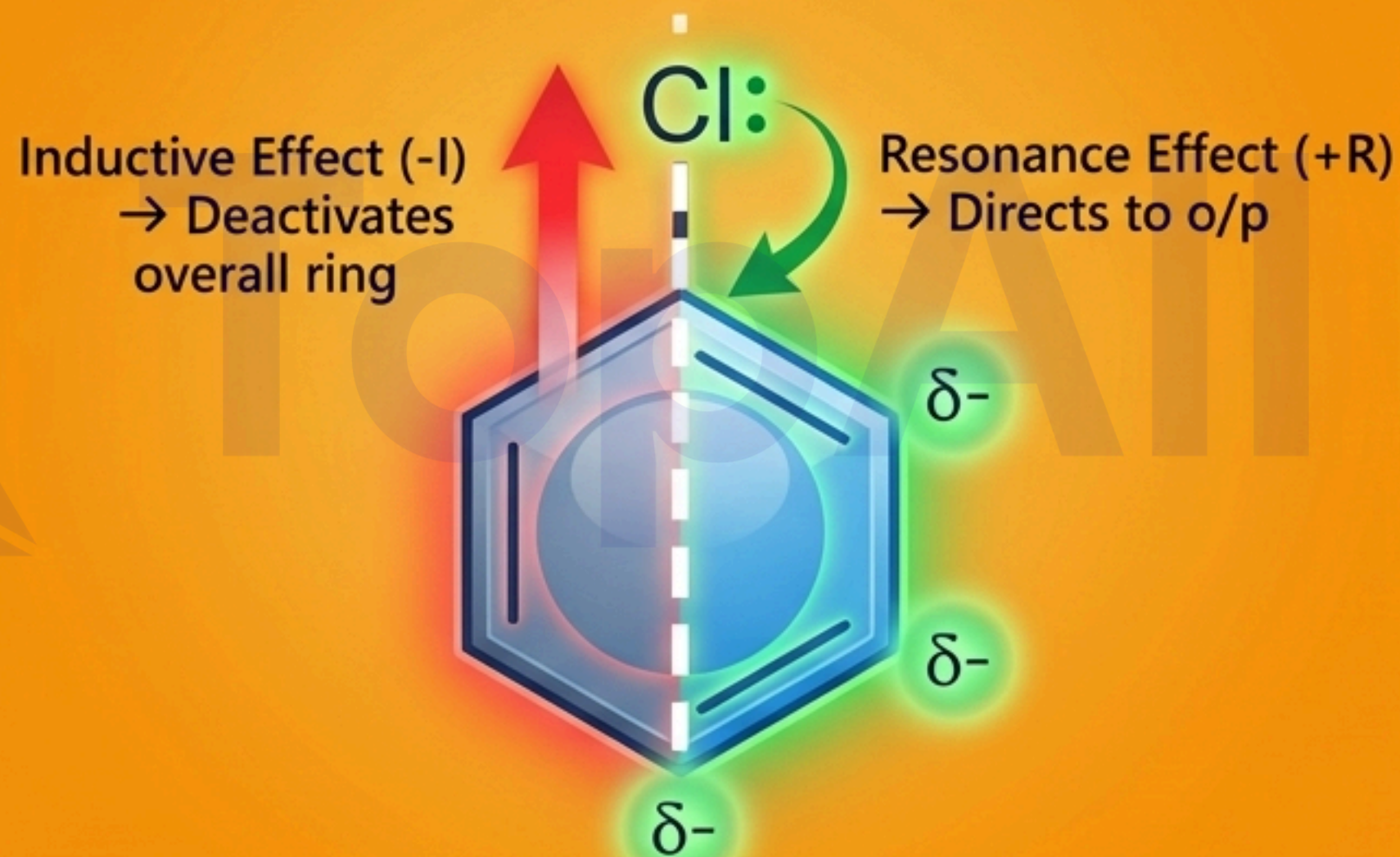
$-\text{NO}_2$, $-\text{CN}$, $-\text{CHO}$, $-\text{COOH}$, $-\text{SO}_3\text{H}$

The Halogen Exception

Halogens are a paradox. Their strong inductive **withdrawal** (-I) slows the reaction down (deactivation). However, their resonance donation (+R) still dictates the geometry, pushing the attack to the o/p positions.

JEE Trap Alert

Deactivating ☒ Ortho/Para directing ☒



Synthesis & JEE Revision Matrix

Group Type	Reactivity	Direction
Activating group (e.g., -OH, -CH ₃)	↑	Usually o/p
Strong withdrawing (e.g., -NO ₂ , -CN)	↓	Meta
Halogen (-F, -Cl, -Br, -I)	↓	o/p

Key Takeaway

Mastering this matrix unlocks almost all electrophilic aromatic substitution prediction questions.
Remember: Halogens are the only deactivators that direct ortho/para.



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