Advanced NMR techniques

* We won't discuss theory or instrumentation.
  You should understand application and be able to interpret easier spectra.

1. **Distortionless Enhancement by Polarization Transfer (DEPT)**
   - Distinguishes $^{13}C$ by # of H's attached.
   - DEPT: $CH + CH_3$ up, $CH_2$ down, $CH$ disappears.

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**ISOPENTYL ACETATE IN CDCl3 — DEPT - 135**

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* DEPT(90) — only $CH$
H-H Correlation Spectroscopy (COSY)

Off diagonal peaks (cross peaks)

A) 1-2 § same
B) 2-1
C) 2-3
D) 3-4
Heteronuclear Correlation Spectroscopy (HETCOR)

- Match C to attached H
- Very useful for overlapping protons
- Also good for diastereotopic 'H
Example

\[ CH_3 - CH - CH_2 - CH - CH_3 \]

\[ \text{Diastereotopic H's: C+D} \]

\[ \text{Diastereotopic CH}_3\text{'s: 5+6} \]