

# Metody 1D FT NMR spektroskopie

## Širokopásmový dekaplink

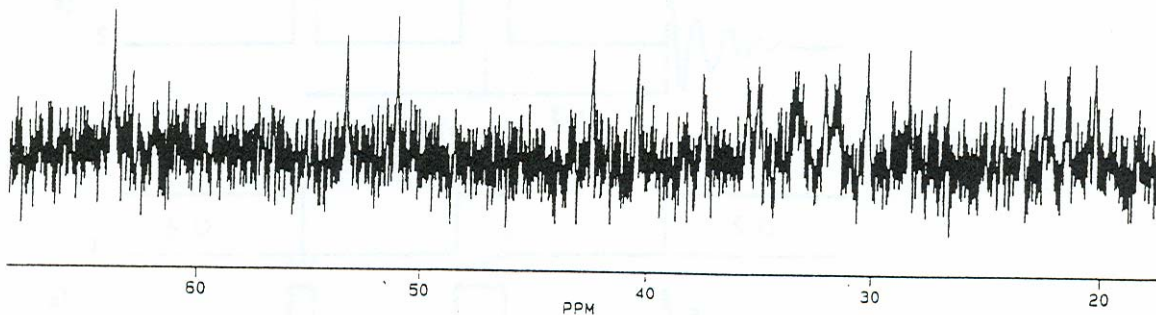


Figure 4.1: Coupled  $^{13}\text{C}$  spectrum of sucrose obtained in 64 scans

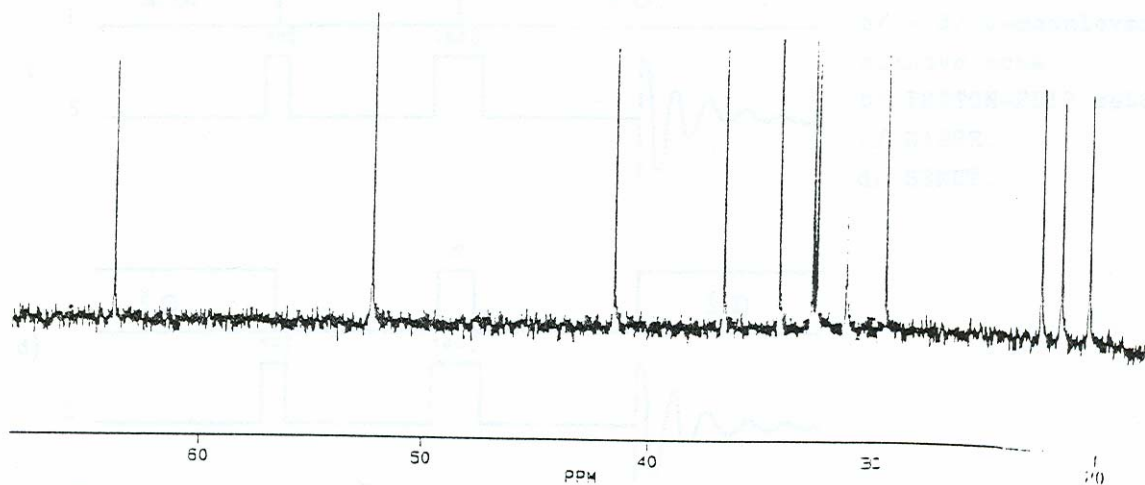


Figure 4.2: Broadband decoupled  $^{13}\text{C}$  spectrum of sucrose obtained in 64 scans

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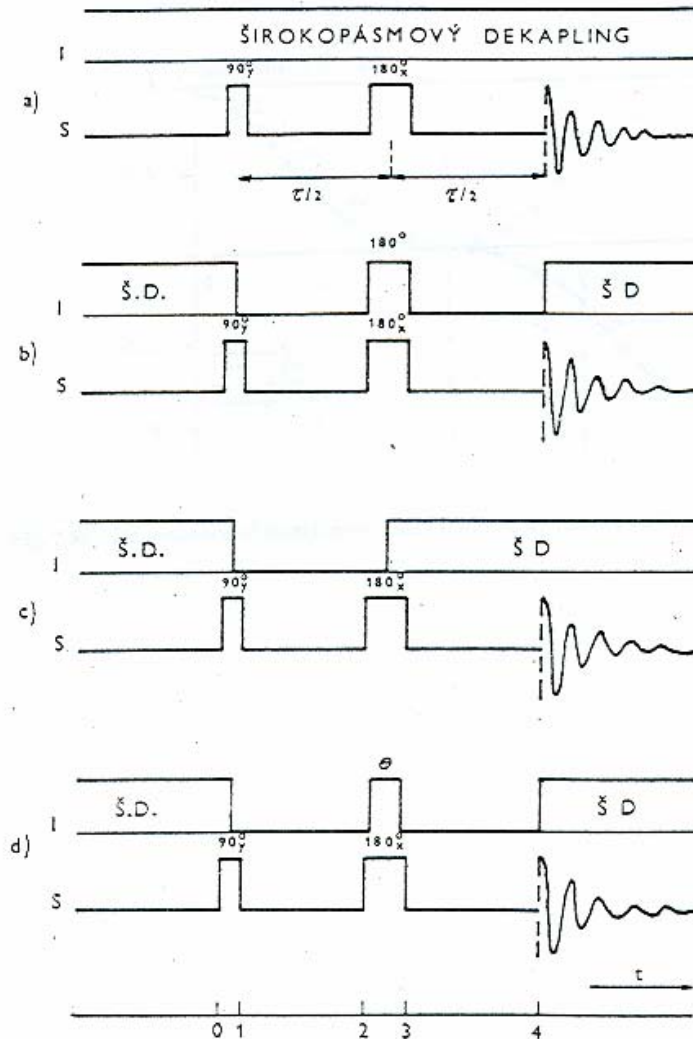
## Pulzní sekvence – editace spekter

SE

APT

GASPE

SEMUT



# Metody 1D FT NMR spektroskopie

APT

APT

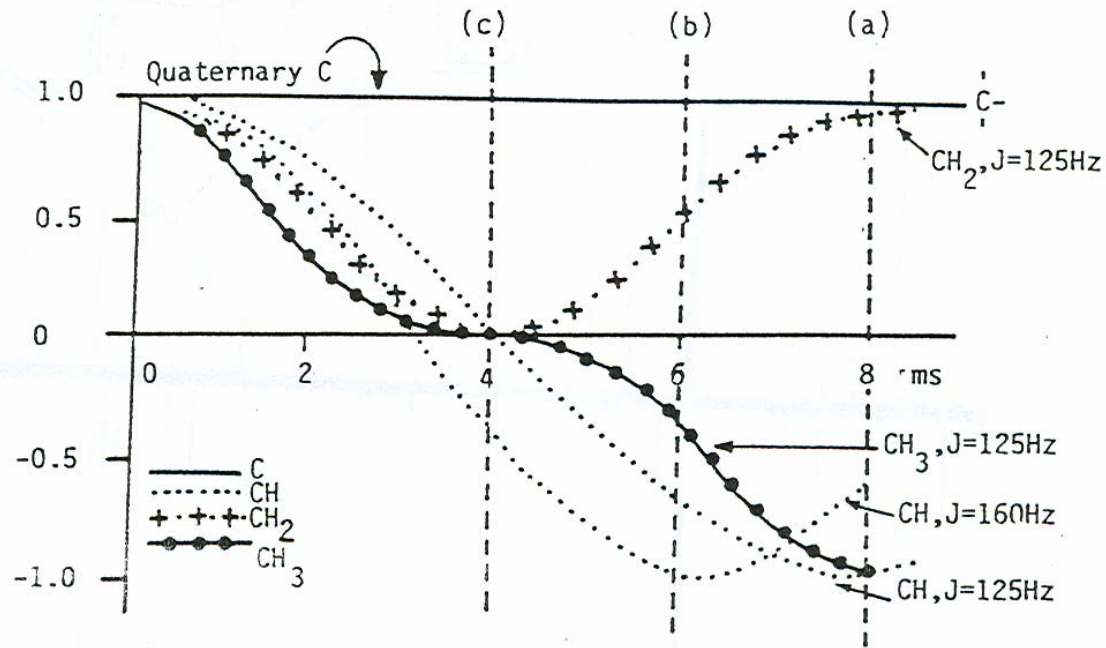
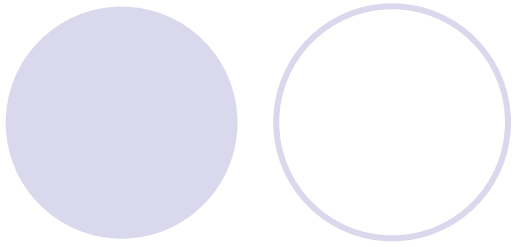
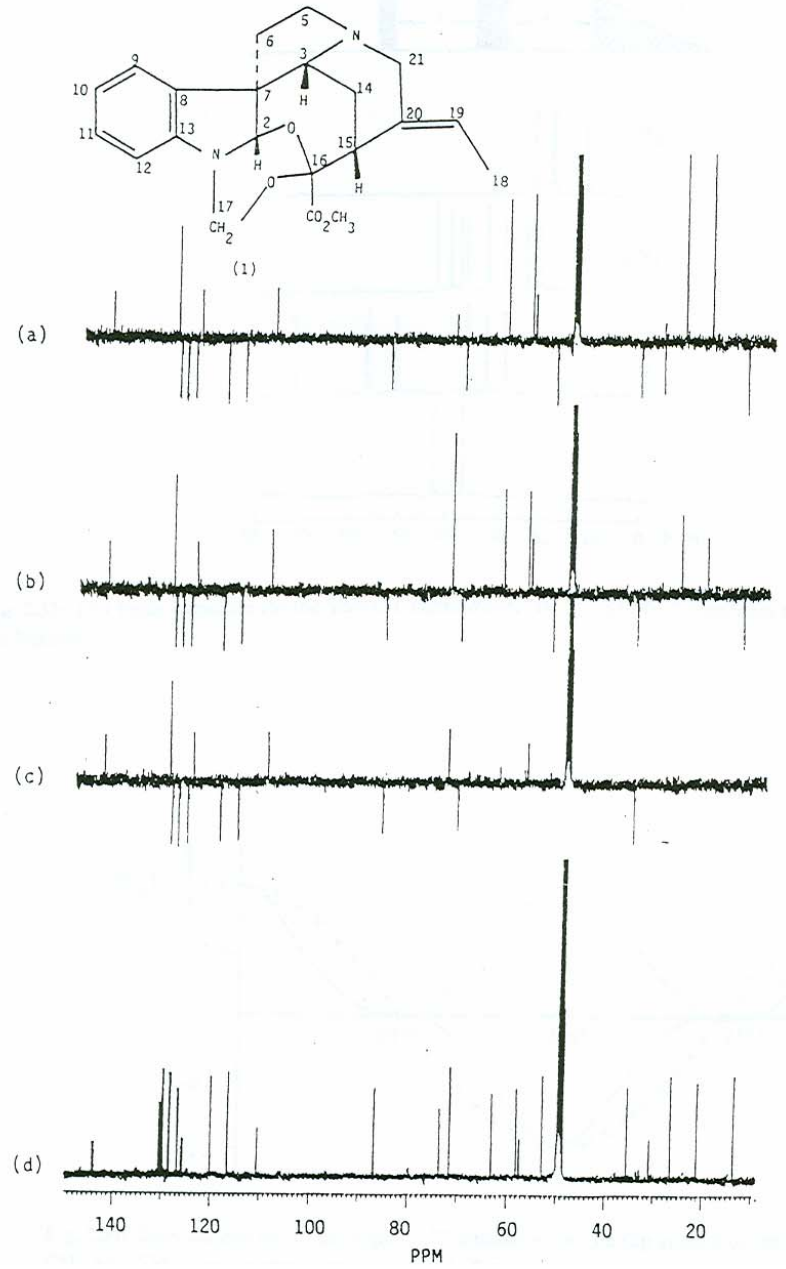


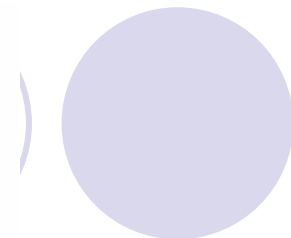
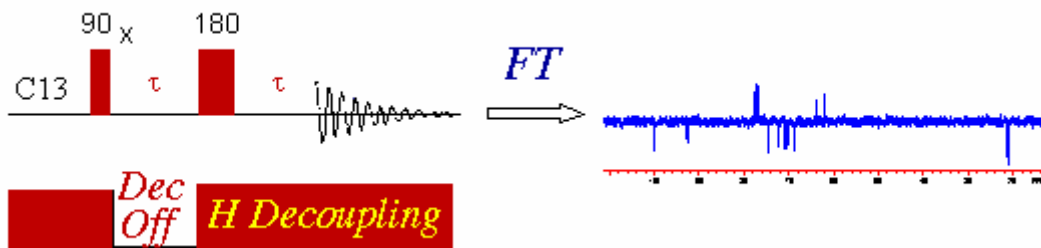
Fig. 2.9: Dependence of signal intensities on the delay  $\tau$  in the APT experiment.



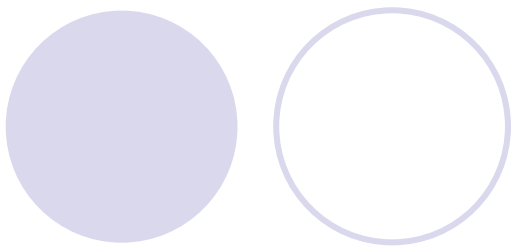
# Metody 1D FT NMR spektroskopie

APT



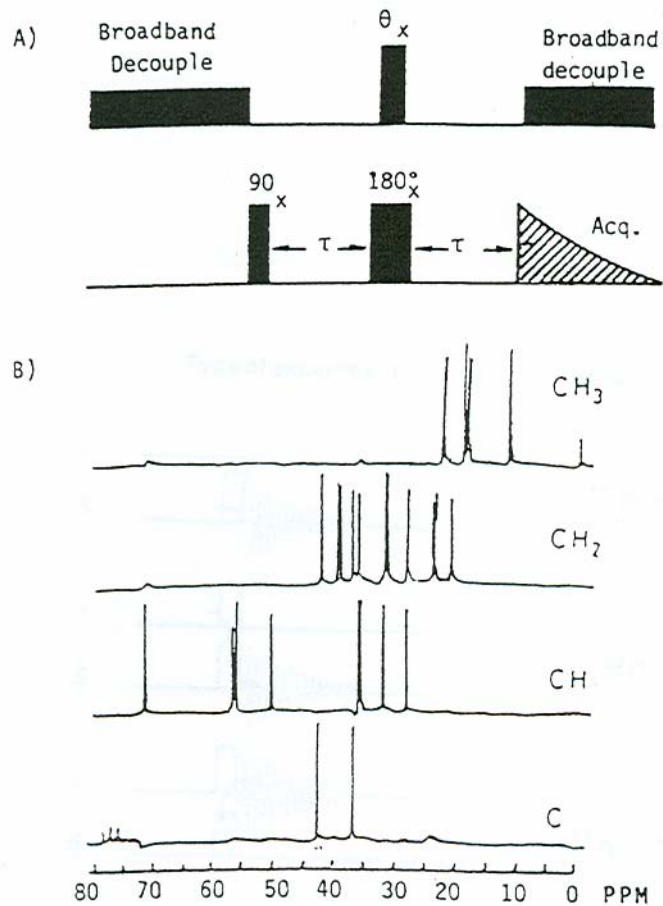


Delay	t (in msec) (J=130)	$\delta_{CH}$	$\delta_{CH_2}$	$\delta_{CH_3}$	Carbon-13 Spectra
$1/(4J)$	1.92				<p>all carbons showing with positive amplitude</p>
$1/(2J)$	3.85				<p>only quaternary carbons showing up</p>
$1/J$	7.69				<p><math>CH_2 \&amp; C</math> <math>CH_3 \&amp; CH</math></p>



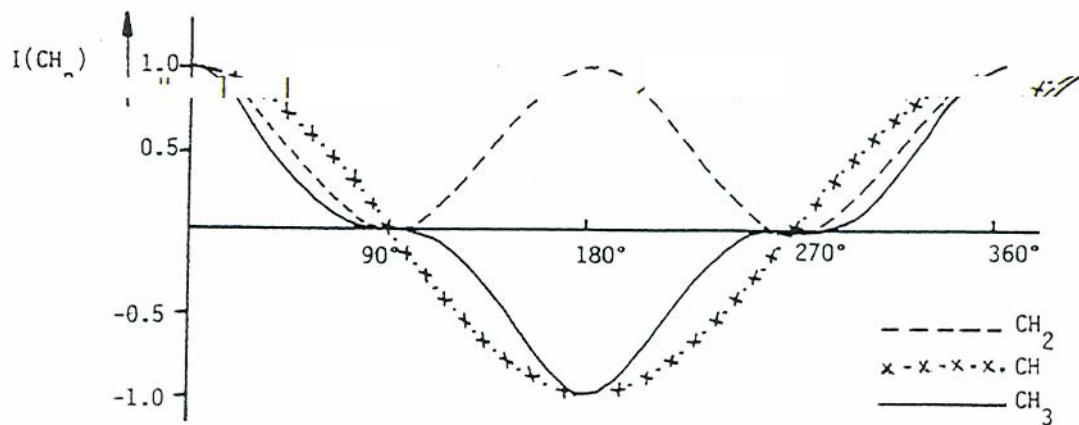
# Metody 1D FT NMR spektroskopie

SEMUT



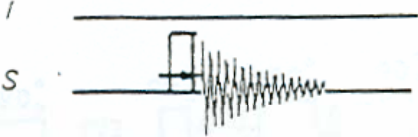
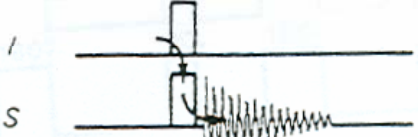


# Metody 1D FT NMR spektroskopie

## SEMUT



# Metody 1D FT NMR spektroskopie

## Relativní citlivost

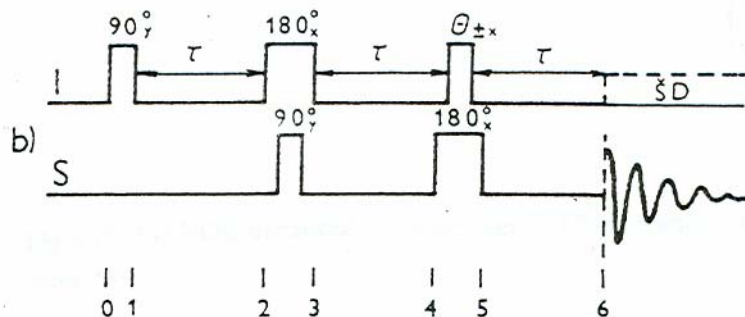
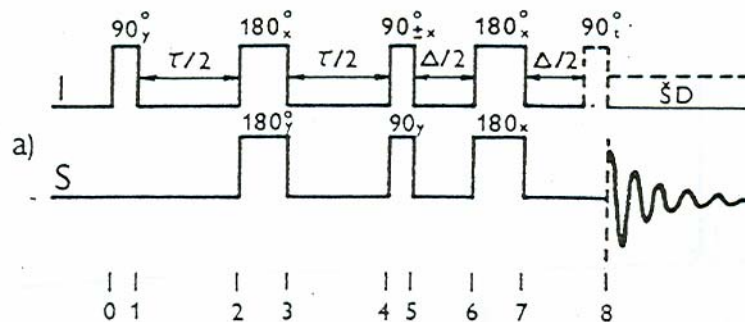
Type of experiment	Sensitivity	C-13	N-15
	$\gamma_S^{5/2} (1 - e^{-\pi/T_1^S})$	1	1
	$\gamma_I \gamma_S^{3/2} (1 - e^{-\pi/T_1^I})$	4	10
	$\gamma_I^{3/2} \gamma_S (1 - e^{-\pi/T_1^S})$	8	31.6
	$\gamma_I^{5/2} (1 - e^{-\pi/T_1^I})$	32	316



# Metody 1D FT NMR spektroskopie

## Přenos polarizace

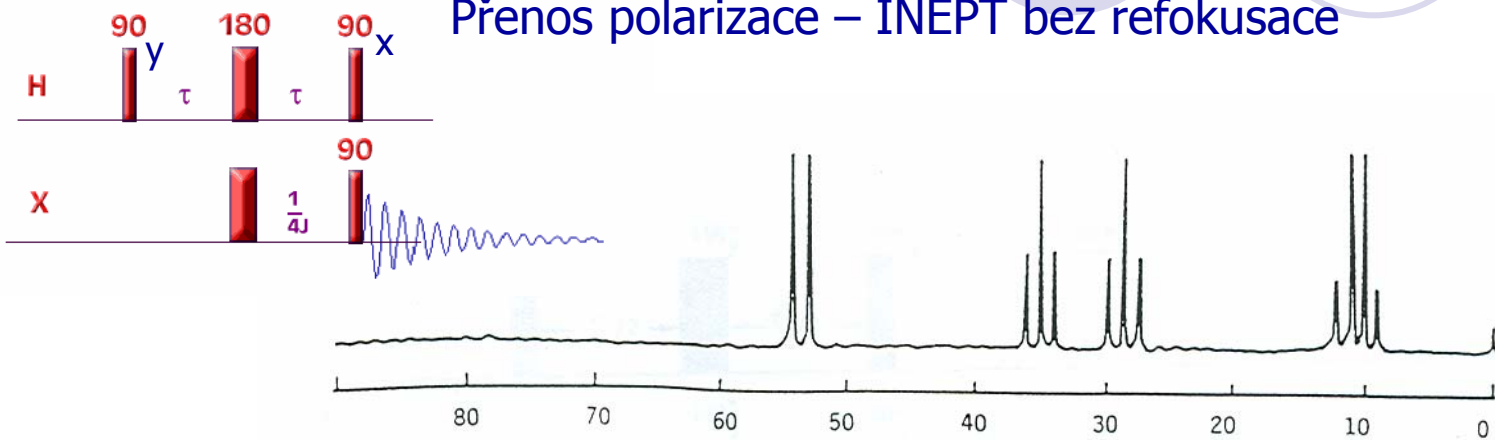
INEPT



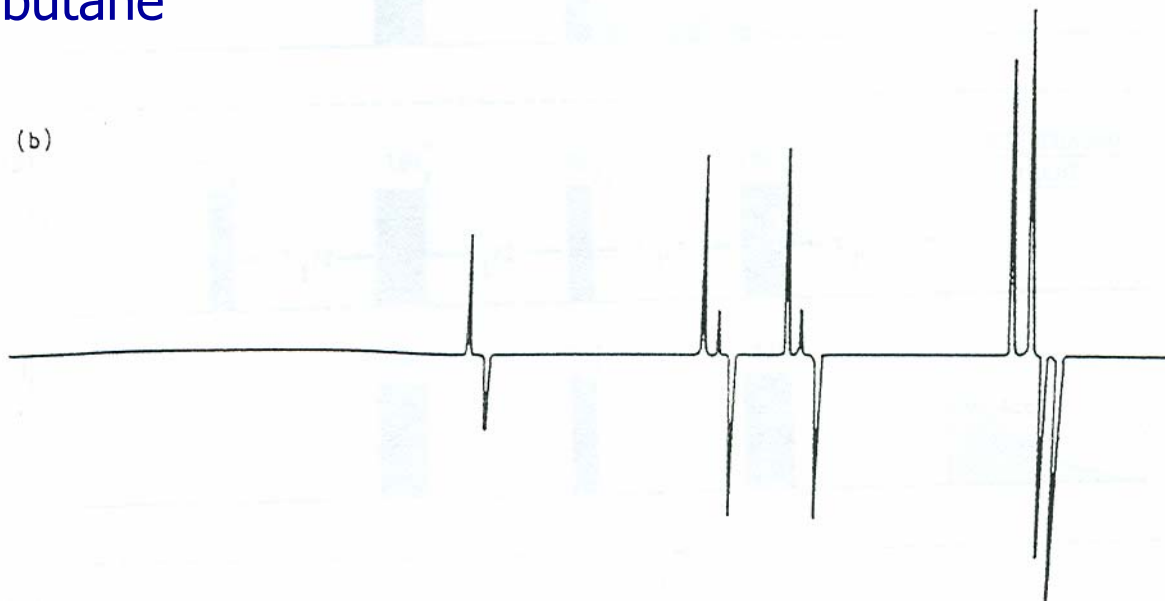
DEPT

# Metody 1D FT NMR spektroskopie

Přenos polarizace – INEPT bez refokusace

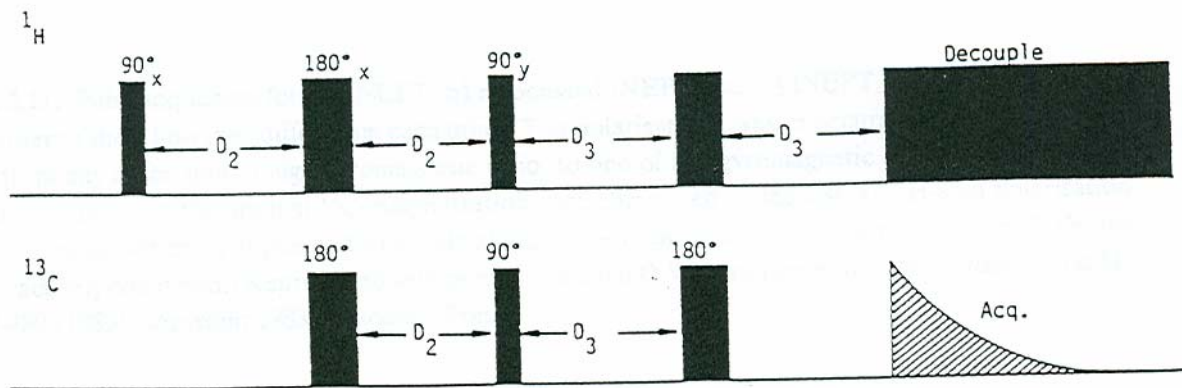


1,2-dibromobutane



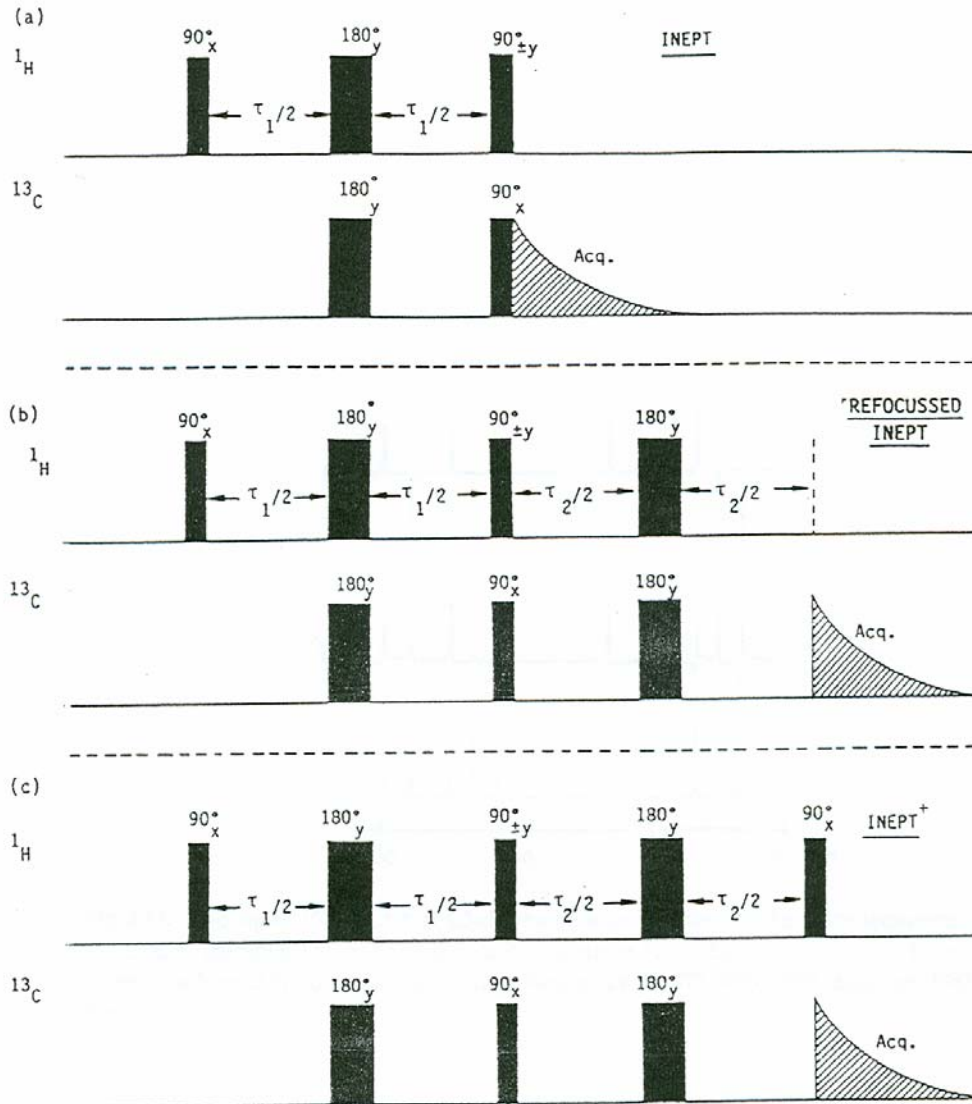
# Metody 1D FT NMR spektroskopie

Přenos polarizace – INEPT s refokusací



# Metody 1D FT NMR spektroskopie

## Přenos polarizace – INEPT – různé varianty



# Metody 1D FT NMR spektroskopie

## Přenos polarizace – INEPT – různé varianty

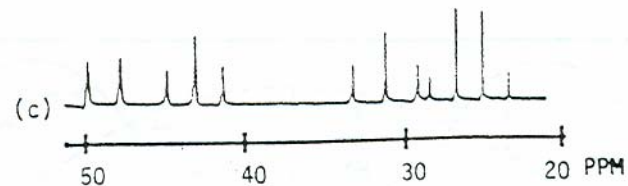
INEPT



INEPT s refokusací

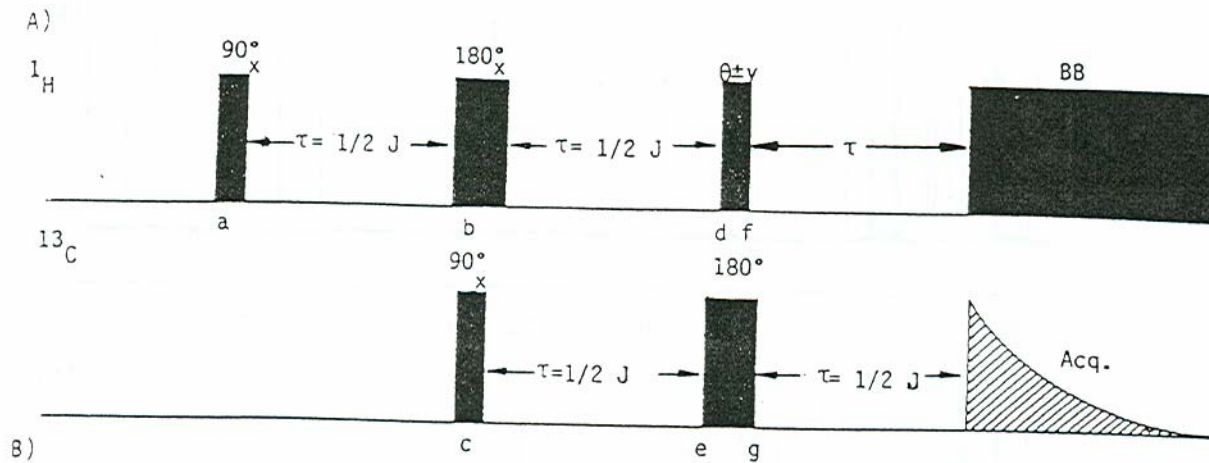


INEPT+



# Metody 1D FT NMR spektroskopie

## Přenos polarizace – DEPT



# Metody 1D FT NMR spektroskopie

## Přenos polarizace – DEPT

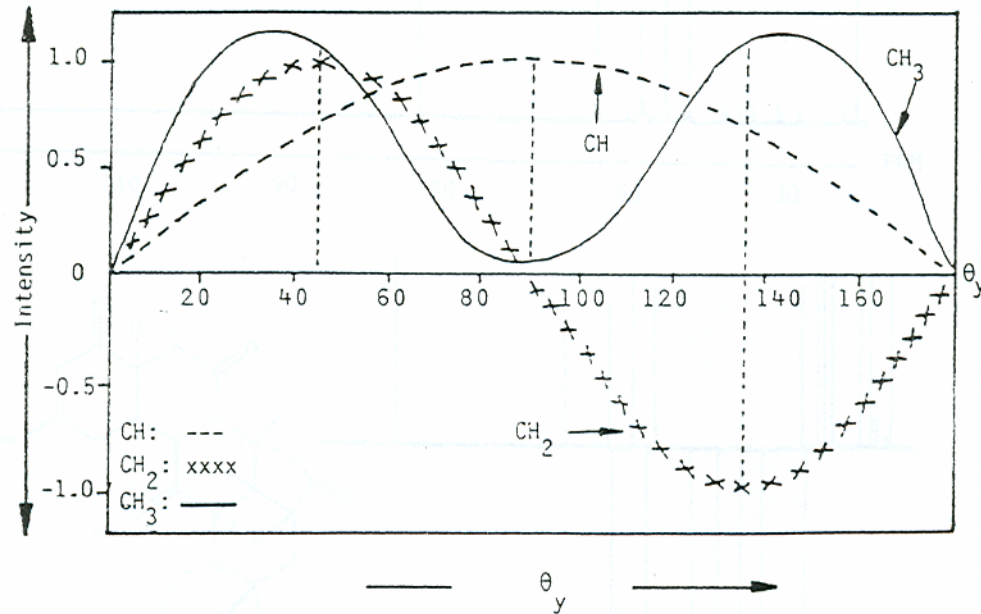
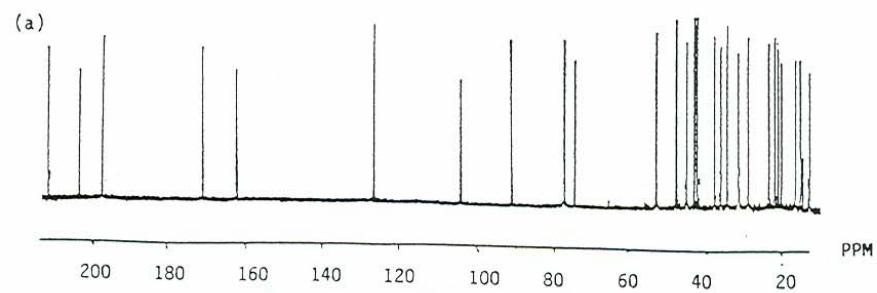


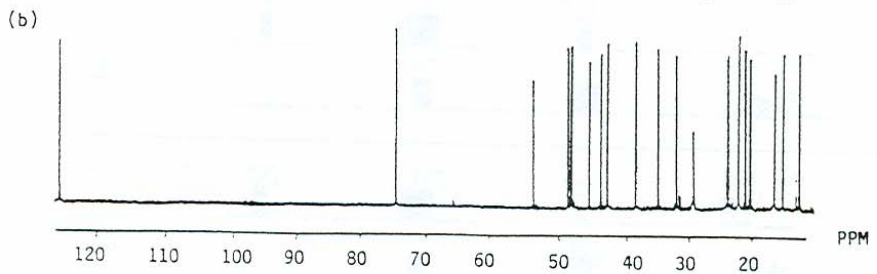
Fig. 2.26: Dependence of signal intensities of CH<sub>3</sub>, CH<sub>2</sub> and CH carbons in the DEPT experiment on the angle  $\theta_y$  of the last polarisation pulse.

# 1D C-13 spektrum



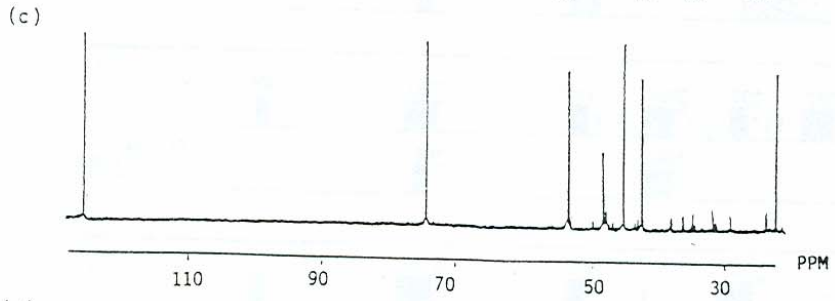
C, CH, CH<sub>2</sub> CH<sub>3</sub>

## DEPT – θ=45°



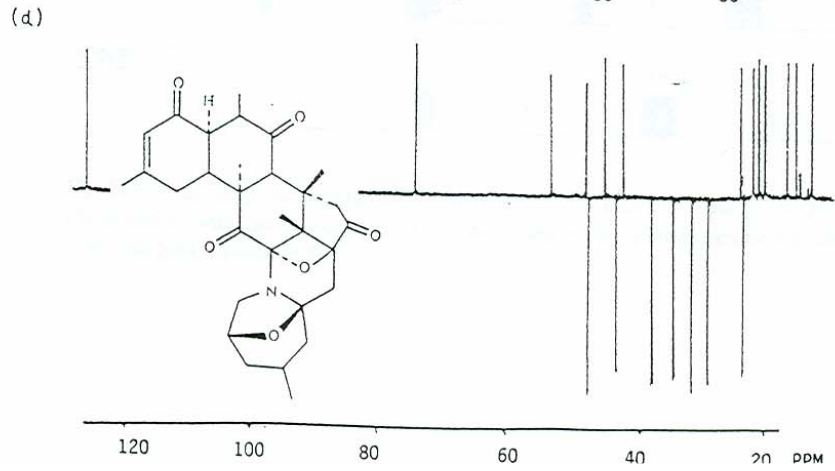
CH, CH<sub>2</sub> CH<sub>3</sub>

## DEPT – θ=90°



CH

## DEPT – θ=135°



CH<sup>+</sup>, CH<sub>2</sub><sup>-</sup>, CH<sub>3</sub><sup>+</sup>



# Metody 1D FT NMR spektroskopie

## Přenos polarizace – DEPT – různé varianty

