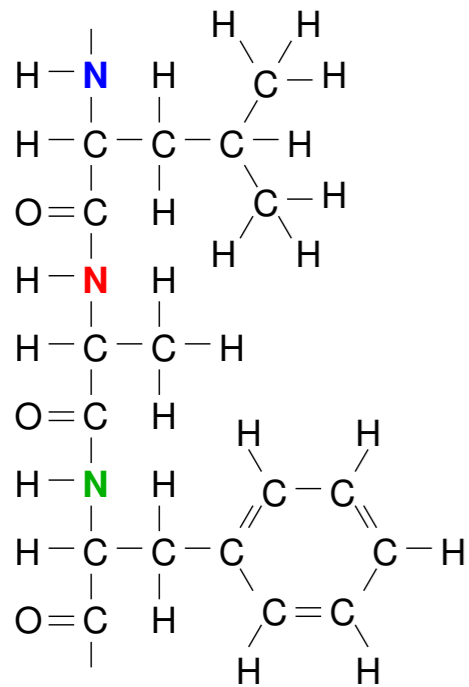


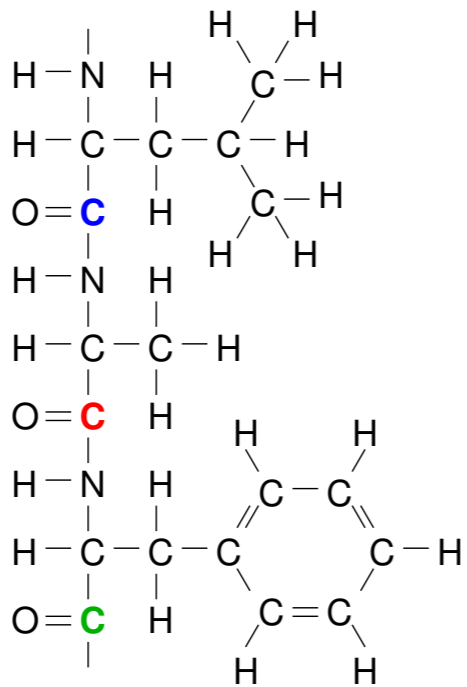
LECTURE 6

Spin systems in proteins

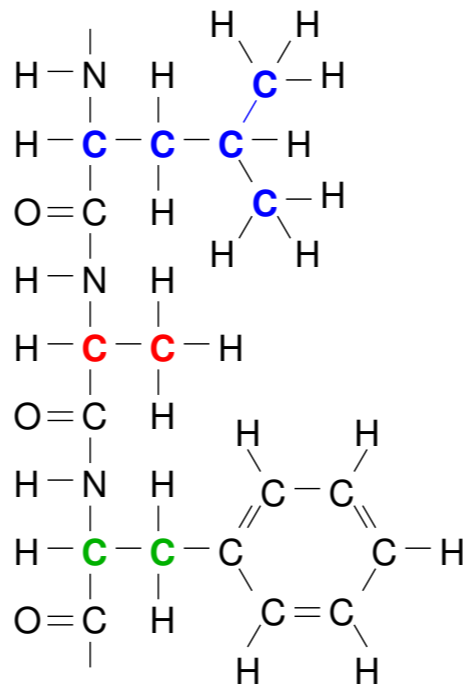
A



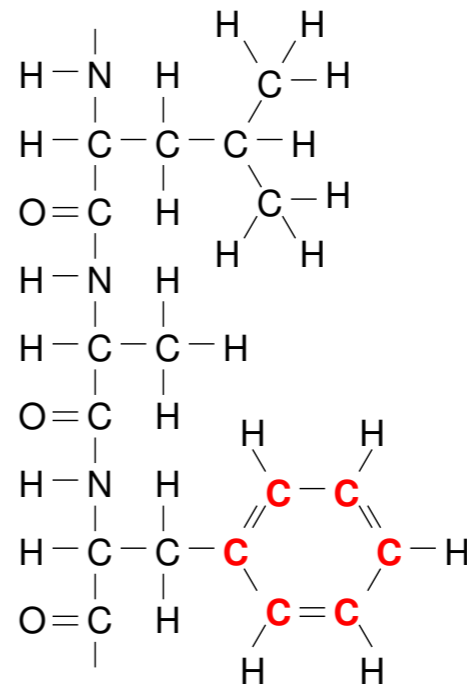
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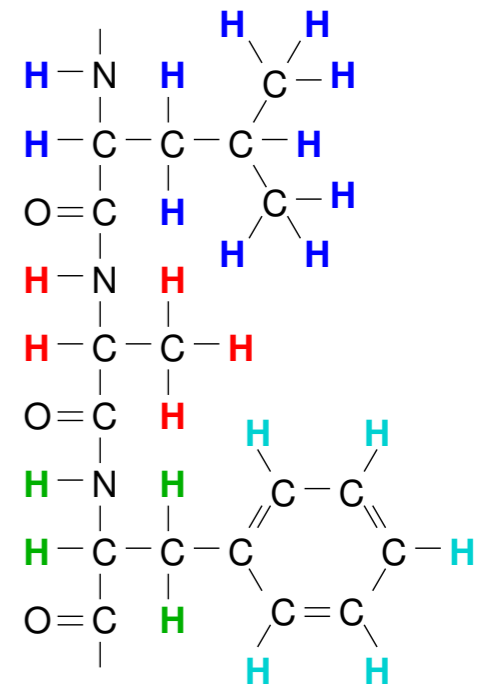
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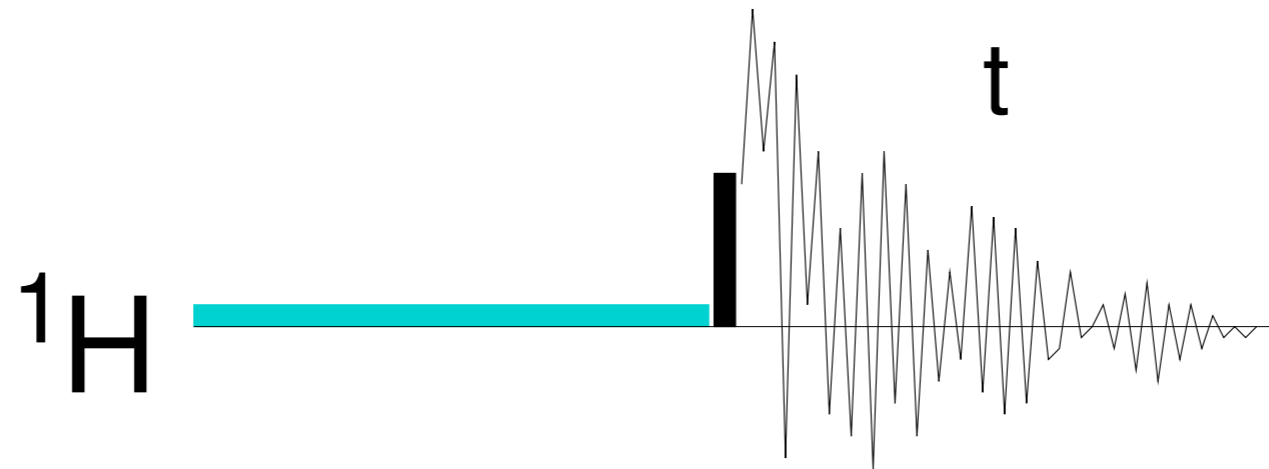
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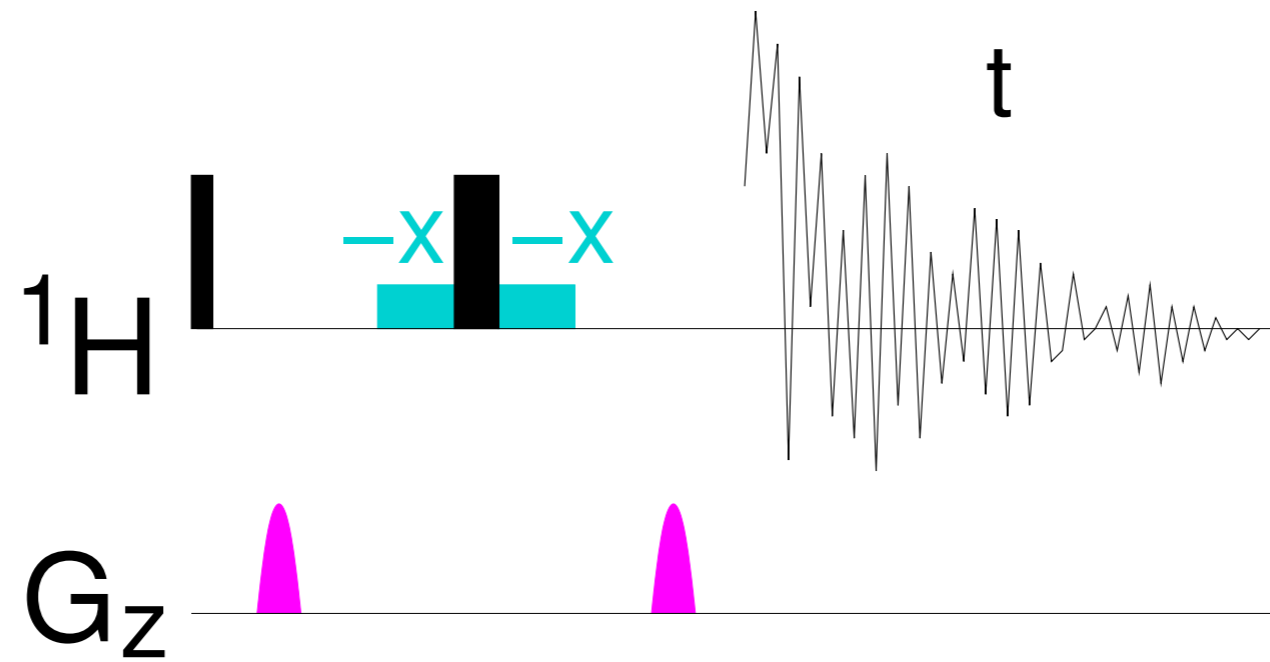
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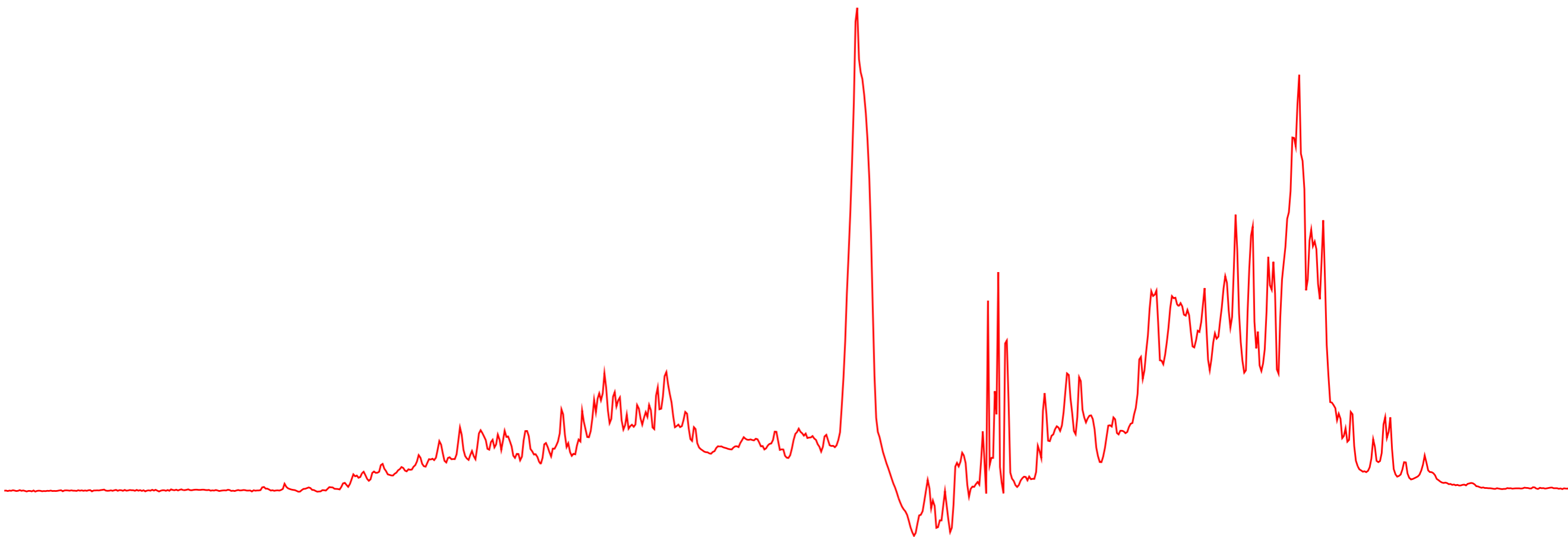


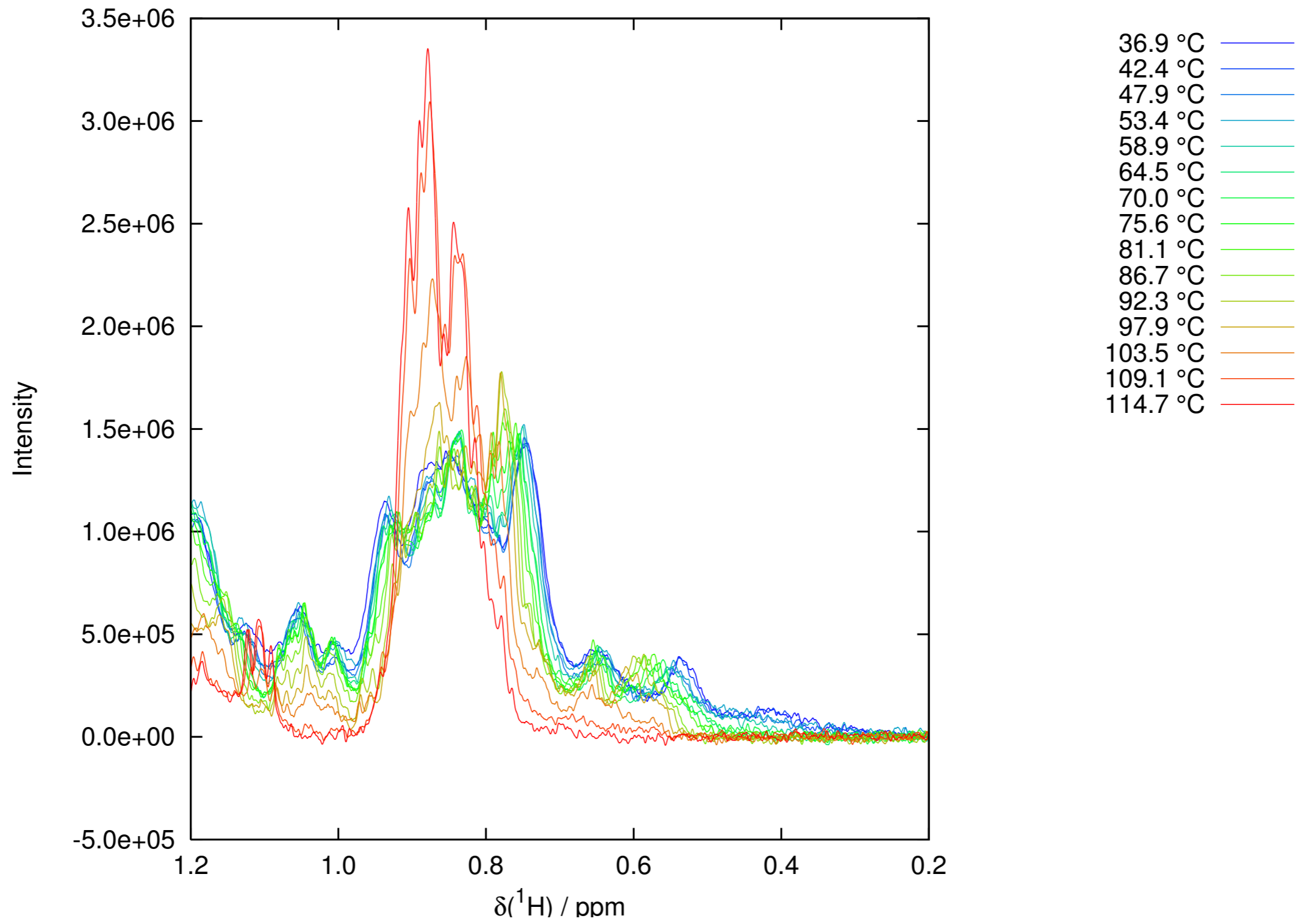
Presaturation

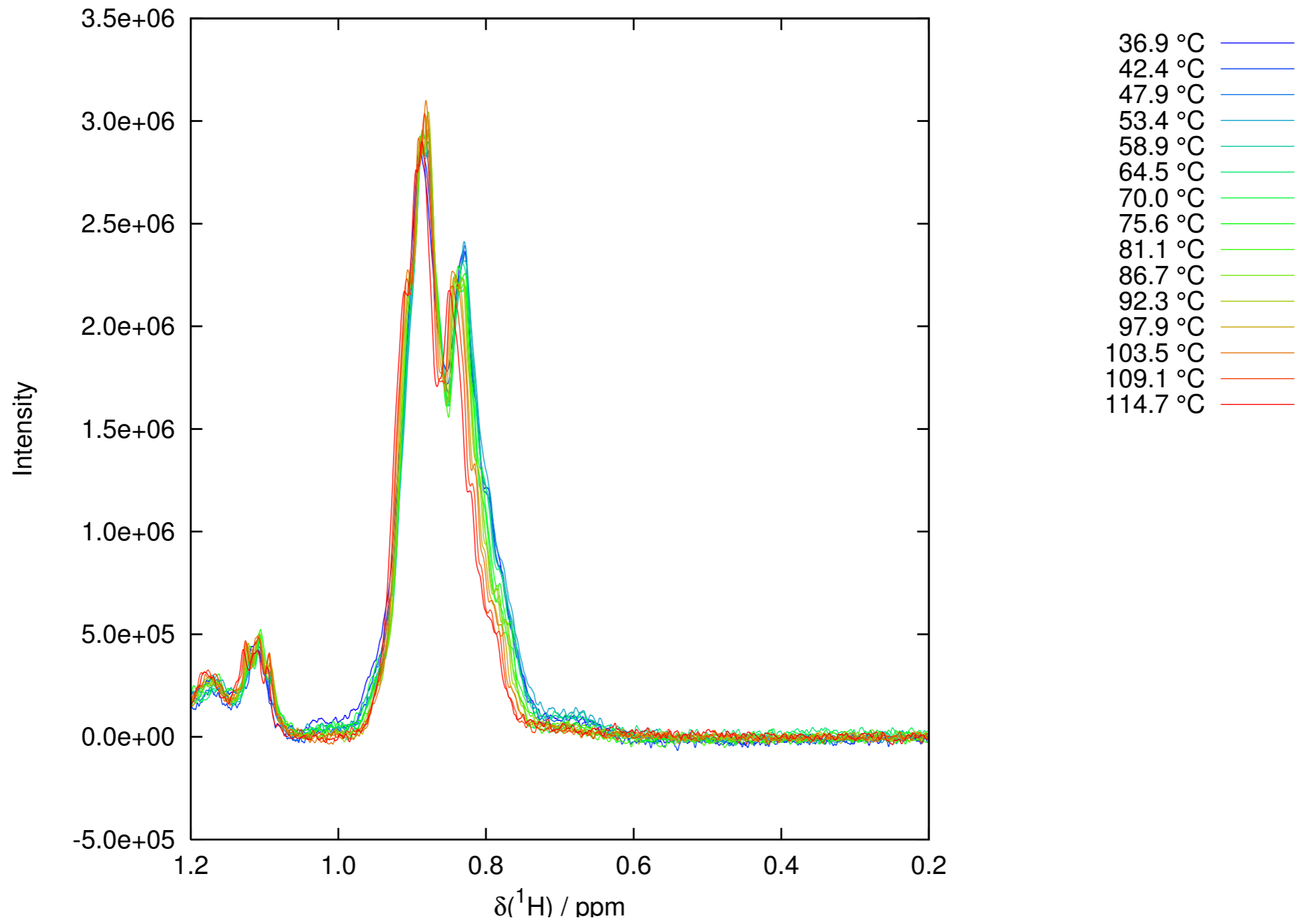


WATERGATE

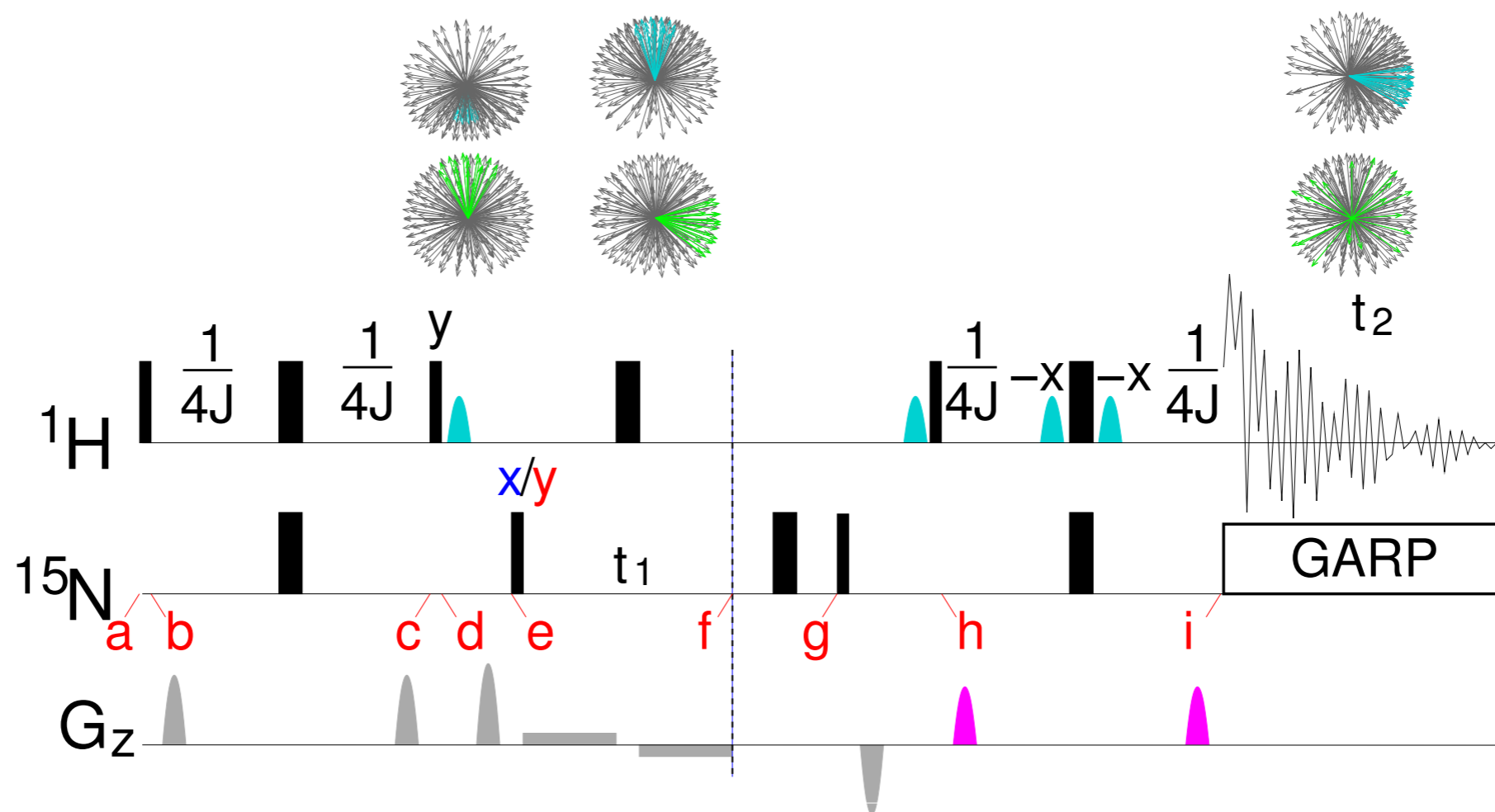


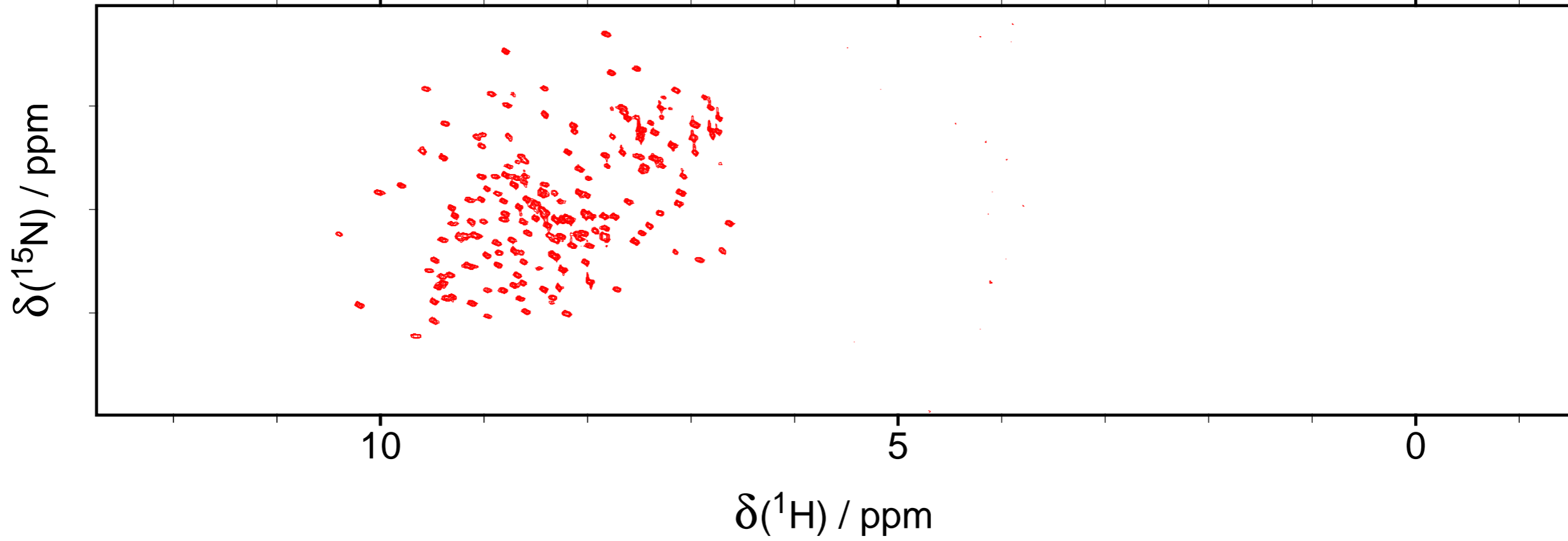
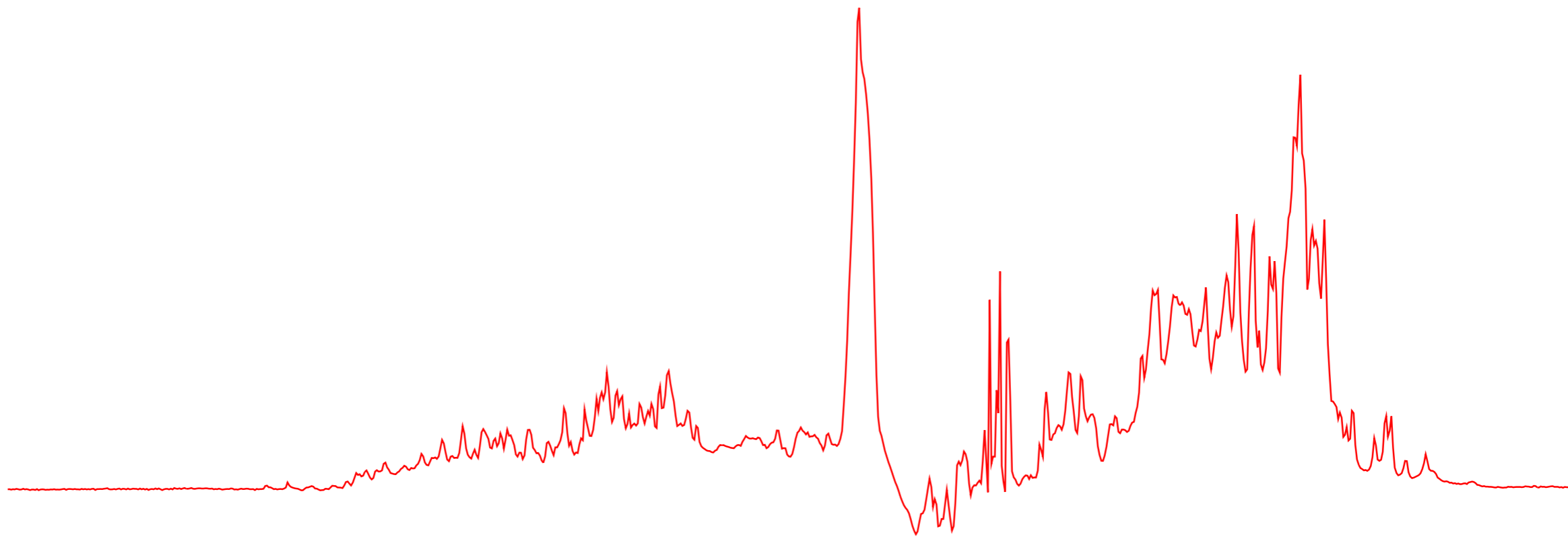




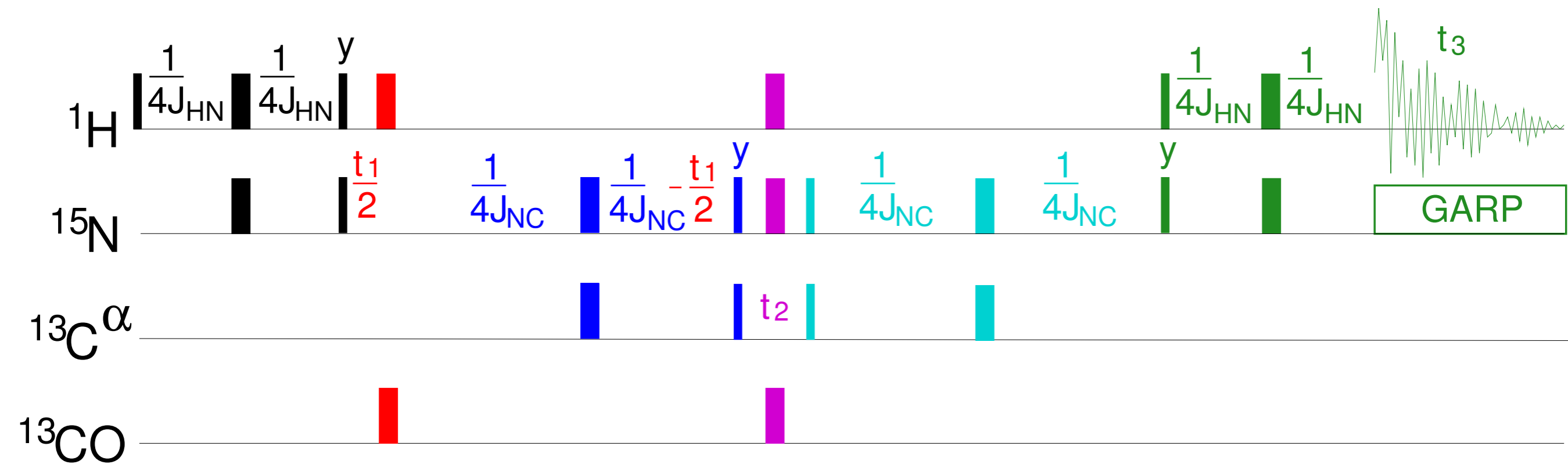


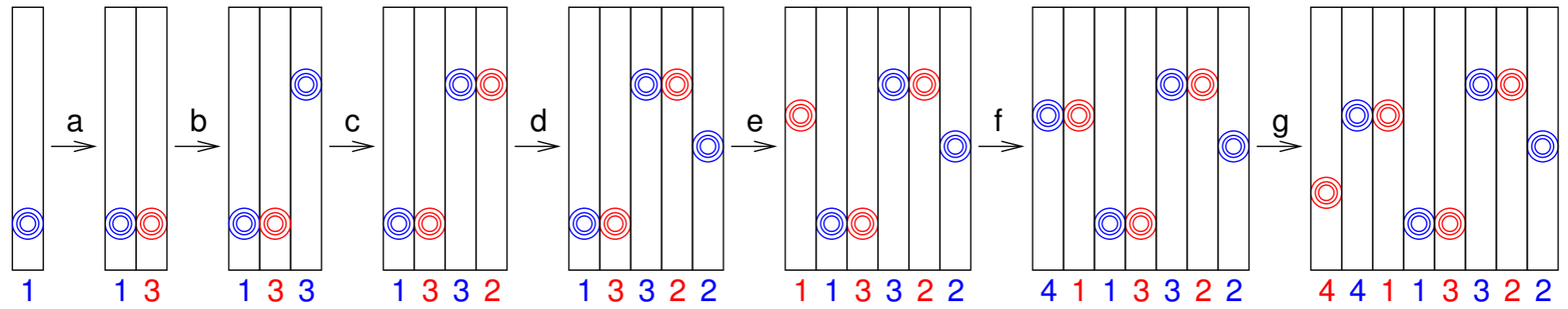
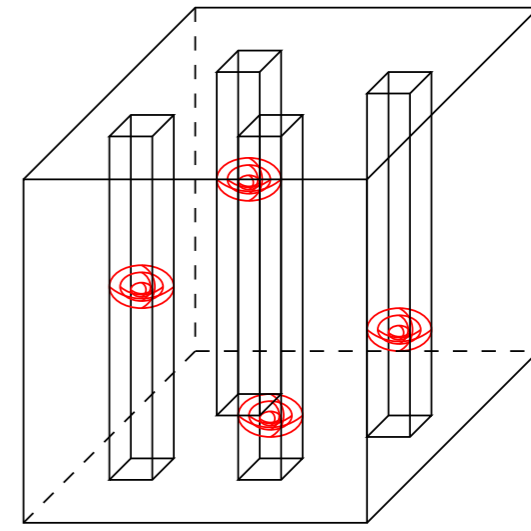
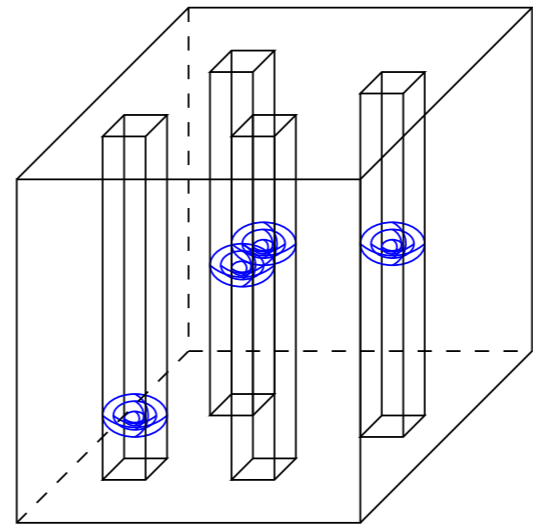
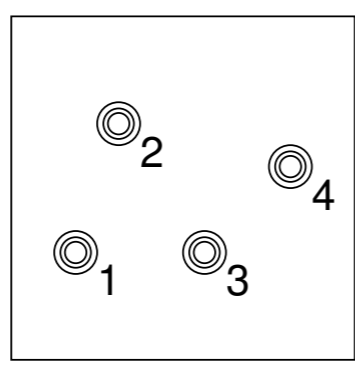
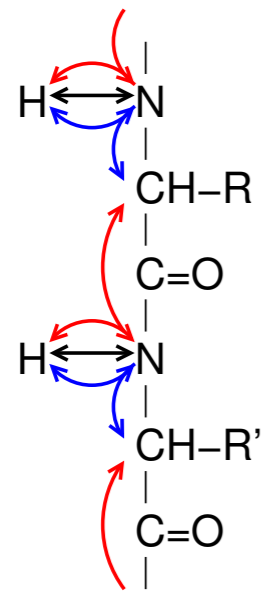
$^1\text{H}-^{15}\text{N}$ HSQC





HNCA, a triple resonance experiment





amino acid	NMR C^β	chemical shift
G	G	no C^β
A	A	< 25 ppm
C, E, H, K, M, P, Q, R, V, W	O	25 to 36 ppm
D, F, I, L, N, Y, C (S-S)	X	36 to 45 ppm
S, T	U	55 to 70 ppm

P A C D E F G H I K L M N Q R S T V W Y

O A O X O X G O X O X O X O O U U O O X

a = HNCACB
b = CBCA(CO)NH

a b a b a b a b a b a b a b a b a b

