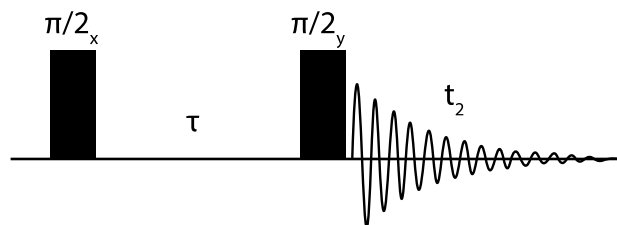


Jigsaw 3E

1. [From Past Exam] [Keeler Section 8.3] Draw the COSY pulse sequence and identify the preparation and mixing periods. Explain the different steps of this sequence and identify what is observed in the 2D spectrum.
2. [Keeler Section 8.3] Consider a hypothetical molecule containing two protons, A and X, which are coupled together. Draw the schematic COSY spectrum.
3. * [Keeler Sections 4.7-10 and Section 7.3] The so-called 1–1 sequence is shown below.



- a. Use the vector model to describe the excitation that this sequence produces as a function of offset.
- b. Sketch a graph of y -magnetization as a function of offset during t_2 .
- c. At what values of $\Omega\tau$ do any nulls occur?
- d. How could this sequence be used to observe spectra in the presence of strong solvent signals?