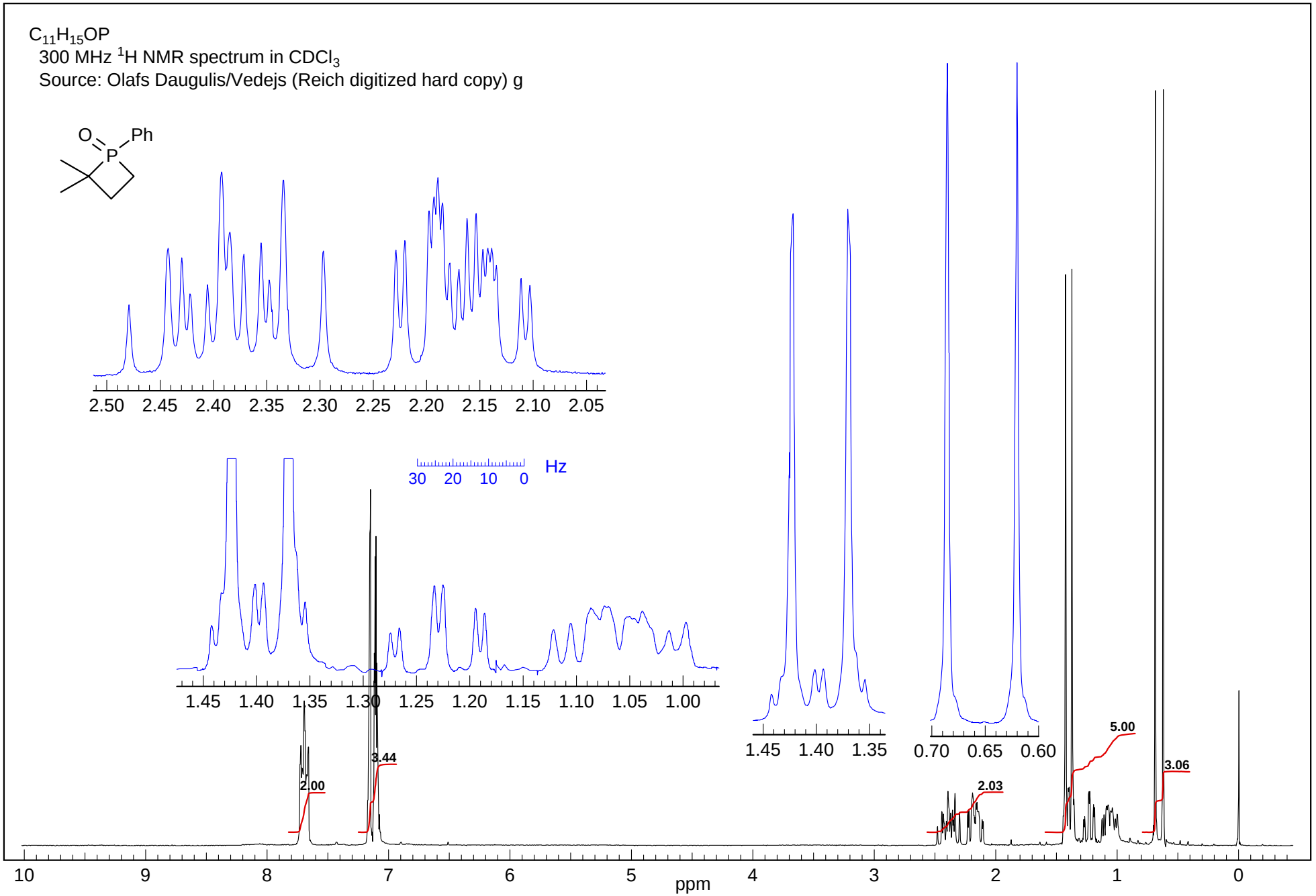
Exercise: Here is a complicated system, where all of NMR-active nuclei in the ring are coupled to each other. Analyze the multiplets amd Identify all of the ^{1}H-^{1}H and ^{1}H-^{31}P *J* couplings in the spectrum.



PLT NMR-phosphacyclobutane-1-phenyl-1-oxo-2,2-dimethyl-g.plt

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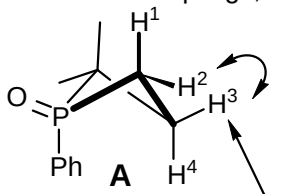
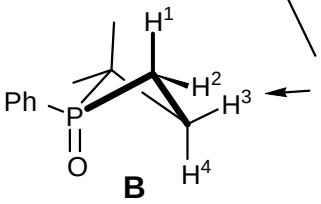
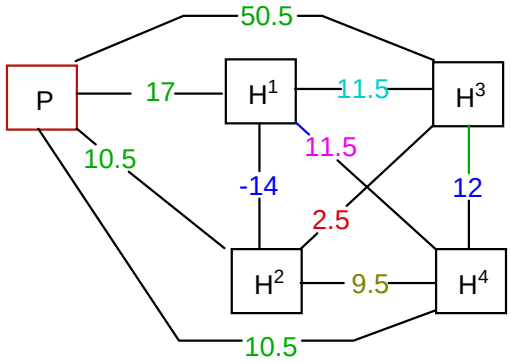
The H-H couplings can be matched up pairwaise, the remaining coupling to each proton have to be to the ^{31}P. If the downfield proton of each CH_2 group was assigned to the one cis to the P=O group, then the conformation must be A to fit the couplings, otherwise B



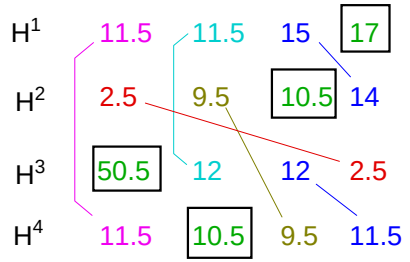
The smallest $^{3}J_{HH}$ should be between pseudoequatorial trans protons H^2 and H^3

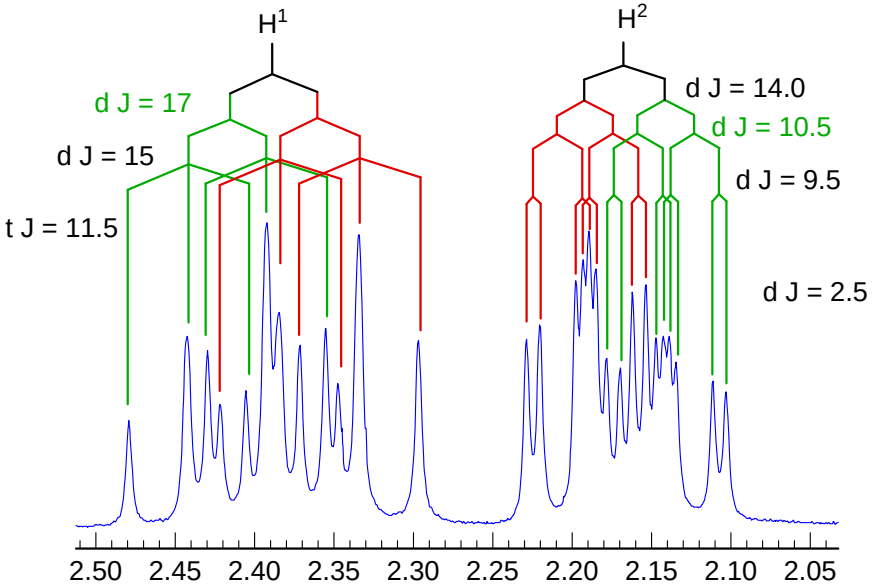


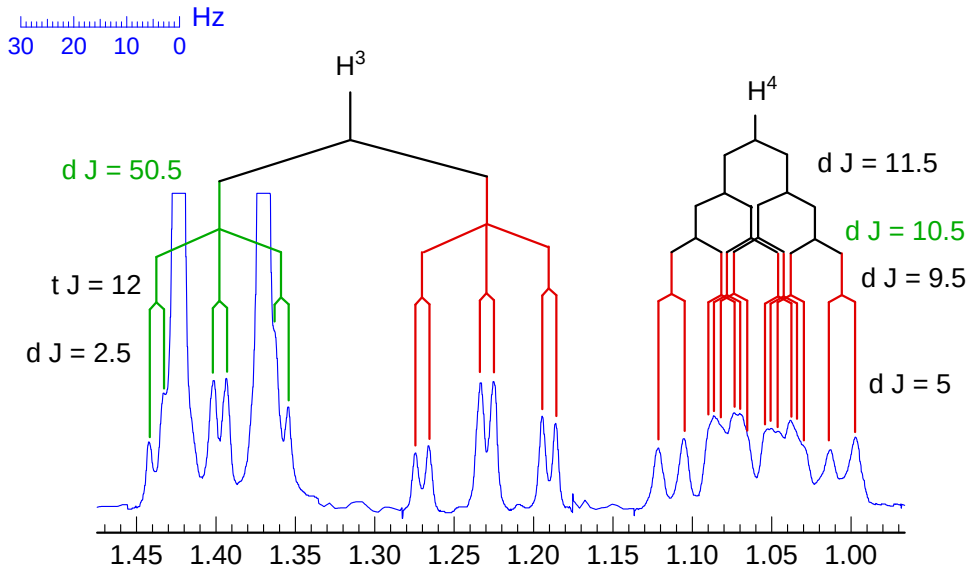
The largest $^{3}J_{HP}$ (50 Hz) should be to the anti proton



Boxed ones are unmatched, thus J_{HP}







PLT NMR-phosphacyclobutane-1-phenyl-1-oxo-2,2-dimethyl-g.plt