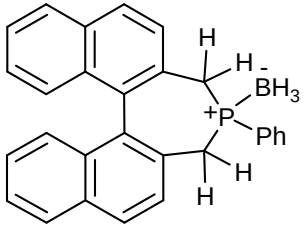
**Problem R-94G** ($C_{28}H_{24}BP$). Interpret the δ 3 region of the 300 MHz $^1H$ NMR spectrum of the phosphine borane below (obtain *J* and δ values). Hints: (1) Rotation around the Ar-Ar bond is slow on the NMR time scale (2) Consider carefully the "leaning". (Source: O. Daugulis/E. Vedejs 12/24) g







PLT pr-087-to-96.plt

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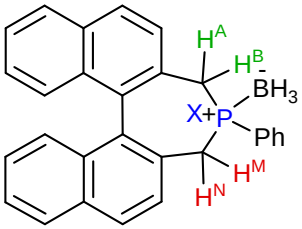
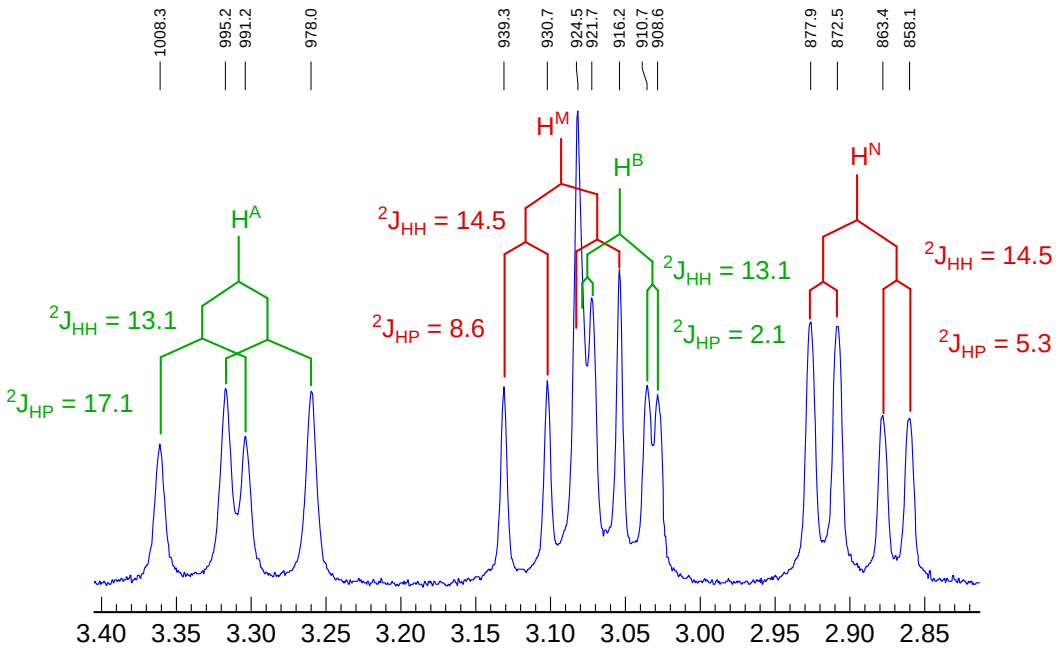



An ABMNX spin system




The pairs of lines which show no leaning have to correspond to the H-P coupling, the ones that lean are H-H. The degree of leaning as well as the slightly different size of $^2J_{HH}$ for the two $CH_2$ groups allow the pairs of protons to be assigned.