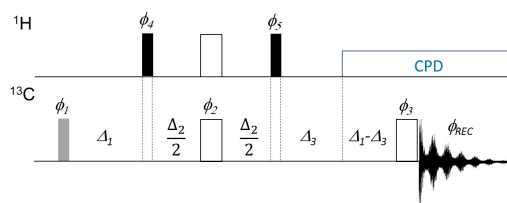


**Broadband APT (BAPT): a Versatile APT Experiment with Improved  $J$ -Compensation and Optimal Suppression of Artifacts in  $C_q$ -only Spectra**P. Bigler<sup>1</sup>, D. Chakif<sup>1</sup>, I. Gjuroski<sup>1</sup>, J. Furrer<sup>1\*</sup><sup>1</sup>University Bern, Department of Chemistry, Biochemistry and Pharmaceutical Sciences

1D  $^{13}\text{C}$ -NMR DEPT or APT experiments still belong to the most common experiments for assigning  $^{13}\text{C}$  signals and for the elucidation of molecular structures on a routine level. The APT sequence<sup>1</sup> suffers from two main drawbacks, found long ago: (i) a low tolerance for wide ranges of  $^1J_{\text{CH}}$  values, which in the worst-case cancels signals or produces signals with mistaken multiplicity. (ii) The frequent presence of intense artifacts in the  $C_q$ -only spectrum, especially if the range of coupling constants of the investigated molecule is large. Improved APT sequences<sup>2</sup> (Compensated Attached Proton Test, CAPT2 and CAPT3) have been designed by the group of McClung to improve the tolerance with respect to the wide range of  $^1J_{\text{CH}}$  values. The CAPT3 sequence indeed leads to excellent tolerance over a wide range of one-bond  $J$  coupling constants.



In this report, we introduce a new APT sequence, the Broadband-APT (BAPT) sequence, which further improves the tolerance of the CAPT sequences to a wide range of  $^1J_{\text{CH}}$  values and can provide ultra-clean  $C_q$ -only spectra, with  $\text{CH}_n$  artifact levels as low as those obtained using SEMUT, SEMUT-GL and  $i\text{QCD}$  sequences, known to provide the best  $C_q$ -only spectra.

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