

VII. Primer for Decoupler Modes on Bruker AC and AM Spectrometers

by cg fry: revised 28-Oct-98

- PO** – power off; typically leave spectrometer in this mode, although DO is OK
- DO** – “decoupler on”; same as a power switch—decoupling delivered to probe only through AU sequences (*no* decoupling delivered when type in command DO)
- recommend going through DO from and to PO to get to other modes
- HG** – homonuclear gated decoupling; used in NOE and PRESATuration experiments; decoupler off during acquisition;
- DP (typical) = 20-40L (AC's), 30-50L (AM's)
- HD** – homonuclear decoupling; used in HOMODEC experiments; decoupler is gated during acquisition (see Figure below);
- DP = 0-30L (AC's), 10-40L (AM's)
- CW** – continuous wave decoupling; used in selective heteronuclear experiments; decoupler can be on during acquisition (depends on .AU sequence)
- DP = 0-30L (AC's), 10-40L (AM's)
- BB** – broadband decoupling; old form, replaced by CPD
- do *not* use BB mode
- CPD** – composite pulse decoupling (hardwired WALTZ-16, A. J. Shaka, J. Keeler, R. Freeman, *J. Magn. Reson.* **53**, 313-340 (1983)); used for broadband decoupling of 1H in heteronuclear experiments; reasonable 90° pulse calibration required, input as P9 for AC's and AM's; gives clean decoupling over ~5 kHz (10 ppm on 500 MHz spectrometers), so O2 must be centered in 1H spectrum on AM-500 (*dof* on Unity-500).
- DP = 18-20H for 5mm probes, 12-14H for 10mm probes,
 - P9=100-130 μ s.

HD - Homonuclear Decoupling Mode

Schematic only: actual fraction decoupler on during AQ is 20%,
on continuously outside AQ

