

Status Report from UK Lab

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presenting work done by **K. Allada** and **C. Dutta**

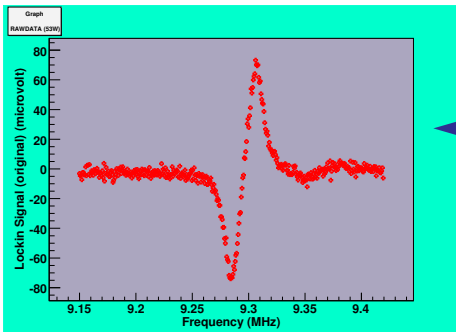
JLab, Pol. ^3He Collab. Meeting, Oct 21, 2005



- 1 EPR Line Shape Analysis
- 2 Frequency Sweep NMR

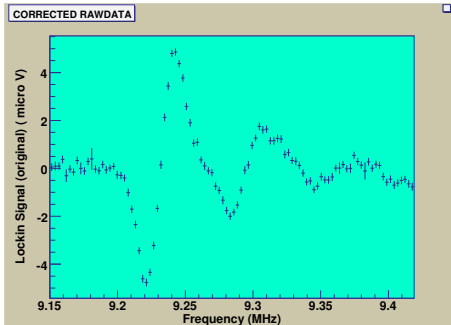
EPR Line Shapes Using Hybrid Cell

Todd's Hybrid Cell: $\rho = 8$ amg., $T \approx 170^\circ\text{C}$.

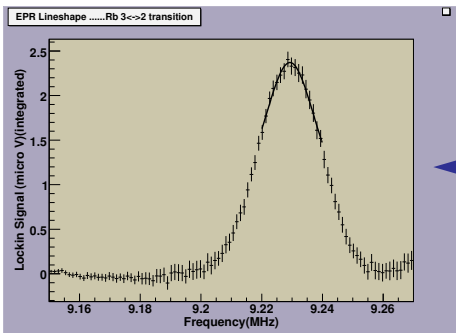


Laser Power: 53 W

Laser Power: 40 W

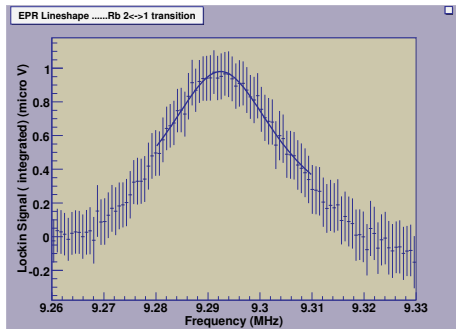


EPR Line Shapes at 40 W



+3 \leftrightarrow +2 Transition

+2 \leftrightarrow +1 Transition



Analysis: integrate areas, correct for electron spin states.

Results for Rb Polarizations:

- P = 53 W: $P_{Rb} \geq 98\%$
- P = 40 W: $P_{Rb} \approx 85\%$

From Double Coil to “Triple” Coil System

- 3rd coil (= compensation coil) on one side of double coil system.
- Used to match the induced voltages on the left and right side w/o moving RF drive coils.
- Specs: same cross section as pick-up coils, $N < 5$ turns, short circuited (so far not grounded).
- Experience so far: it works!! Signal minimized to ≤ 1 mV (gain 50), shift ≤ 100 μ V/kHz.

From Double Coil to “Triple” Coil System

