

Pg v: delete “was invaluable”

Delete page xvii

Pg 2, 4th line of 1.2. Delete “of” in “precisely measure of a range...”

Pg 7: delete “, which” in “The interference pattern, which depends...”

Pg 10, after (2.5): delete apostrophe in it’s

After 2.8, Insert “in” in “The last factor in the numerator...”

Pg 14: Insert “for velocity \mathbf{v} ” in “... is the Doppler shift for an atom moving with velocity \mathbf{v} and the third is...”

Pg 16: It would help the reader to be reminded that ϕ_{eff} was defined in (2.16b)

Pg 22: Add text to explain that the $|\Delta m|=2$ transition can be driven near resonance but its amplitude decays rapidly with detuning for the reason you mention. There is a graph of the $|\Delta m|=2$ and $\Delta m=0$ amplitudes in the PDF on Raman spectroscopy I sent everyone a year ago. I know Ed has a copy.

Pg 31: Clarify that serial devices are programmed early in the sequence so execution time doesn’t matter, and then triggered later at the desired precise time

Pg 33: Put Fig 3.4 following this page. In general figures should be placed close to the first reference made to them.

Pg 41: Add something to make clear the direction of gravity

Pg 43: Clarify polarization of light in Fig 4.2

Five lines from the bottom: “This linearly-polarized light is divided into two beams”

Pg 44: Label components in Fig 4.3. Clarify in the text how the QWP is attached.

Pg 46: Fix Fig 4.4 and its caption to show what you intend

Pg 48: Fix caption of Fig 4.6 because gradient is not included. State clearly the location of the center of the trap.

Pg 51, Fig 4.8: Add explanation/speculation on why the plot goes to zero counts at non-zero duration

Pg 52: Fix the grammar in the sentence leading to Eq (5.4) as Florian requested

Pg 53, Fig 4.9: Label Rb cell, AOMs, EOM and other components

Pg 56, Fig 4.12: Explain in the caption the significance of this graph

Pg 59, Fig 4.14: “The percentages shown are the fractions of the input power leaving each output when driving each AOM with the optimum RF power”, if that is what the percentages actually are

Pg 60: Add figures showing the current control circuit and how the fast switch-off is accomplished.

Pg 63: Second last line, "... becomes non-negligible" or words to explain that the roll-off happens when the Rb pressure becomes large

Pg 71, Fig 5.3: Include actual dimensions of image region in the caption

Pg 73, Fig 5.4: Explain in caption what the two curves are. Explain in the text or in the caption why the right hand fit is so poor (I think you said it was a camera artifact?)

Fig 5.5: Explain that the error bars are dominated by the systematic contribution from the magnification uncertainty (if I recall correctly)

Pg 75: Fix the erroneous statement about the Raman transition coupling four lines from the bottom

Pg 77: "The field is rotated slowly..." not switched. You might also want to include the Larmor precession argument you gave us that says 2ms should be slow

Pg 79, Fig 5.9: Fix the reversed symbols on the plots (or change the caption)

Pg 80. Explain how the second-order Zeeman shift was determined from these spectra?

Add a footnote about how the subsequent improved field alignment has improved the purity

Pg 82: Fix caption to Fig 5.11 so it describes the three curves in the graph

Pg 90: Make clear how figure 6.1 and 6.2 were calculated.

Pg 92: Add diagram like Fig 6.4 to Fig 6.3. Fix axes labels and caption to make it easier for the non-expert to understand this important result.

Pg 93 and elsewhere: replace "colinear" by "collinear"

Fix $\cos \theta = 1 - (1/2)\theta^2$ and its consequences

Pg 99: Insert "train" in "This retroreflection part of the optical *train* is the most crucial..."

Pg 101: "Our sponsors" in place of "Out sponsors"

Drop "do" in "...devised to do align..."

Pg 106: identified in place of indentified

Pg 107: Something like "since the two beams are orthogonally polarized they can be mixed on a PBS", if that is actually what happens

Pg 109, Fig 7.1: Label the components

Pg 111: "Our aim", not "Out aim"

"was", not "wass"

Pg 113: Explain why the spherical aberration is important

Pg 115: Fix "Durin The..."

Fig 118: Explain in caption to Fig 7.7 what is going on with the two plots, in particular the different conditions. Explain that the surprising faster loss at lower power is seen only with the muQuans laser.

Pg 120: Delete repeated “the number of atoms in”

Pg 127: Explain that the graphs in Fig 7.10 are simulations. Describe in the text (briefly) what went into them.

Pg 128: Properly determine the $\sim 1\text{kHz}$ residual shift from a fit and turn that into a statement about the likely effects of the residual AC Stark shift on the interferometer phase

Pg 132: In the caption to Fig. 7.14 state clearly the experimental conditions (velocity selection, launching, ...)

Pg 137: Explain how Fig 7.16 is generated from Fig 7.15

Pg 140: “where the three pulses have identical Rabi frequencies and durations τ , 2τ , and τ ”

Pg 142: Explain that the curve in Fig 7.17 is computed from Eq (7.29).

Pg 143: Top lines. Explain how the phase was measured from the beat note (not the error signal).

Pg 145: Fig 7.19. Correct this, if it is the graph Ed said had an error that lead to the AV turning up at $N=10$

Pg 158: Derive and report the acceleration sensitivity that is given in the abstract. Put it in context – for example, how does it compare with the first generation of other AI’s

References. Capitalise first letters of months where they appear

[17] Jekeli, not JEKELI

[28] Fix ? for \hbar in title of paper

[50] Fix title

[54] Fix title