

References Reference

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1 Introduction

This is a test document. Let's test if this compiles correctly:

This is a potential way of reducing light shift in compact clock systems [1]

This is the first use of vapour cells in atomic clocks / frequency references [2]

A recent review article of 2 photon Rb coompact clocks [3]

Sean's thesis - good vapour cell and general reference [4]

French thesis - sean recommends - looks at LCVR and the noise it adds to system [5]

Rachel Cannon's thesis - good explaination of error signals / lock in detection [6]

New paper on short term stability of 87Rb 2 photon clock, nice diagrams [7]

Eilidh's journal club paper - 776nm flourescence detection [8]

Paper by Aidan and Rachel O on how to characterise noise in an ECDL [9]

Aidan suggestion 2 - Doppler thermometry and how to fit spectra nicely [10]

Steck 87Rb [11]

References

- [1] Claudio E. Calosso et al. "Laser-Frequency Stabilization Using Light Shift in Compact Atomic Clocks". In: *Physical Review Applied* 22.3 (Sept. 12, 2024), p. 034033. DOI: [10.1103/PhysRevApplied.22.034033](https://doi.org/10.1103/PhysRevApplied.22.034033).
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- [3] Asagwegbe C. Obaze-Adeleke, Bryan Semon, and Thejesh N. Bandi. "A Comprehensive Review of Rubidium Two-Photon Vapor Cell Optical Clock: Long-Term Performance Limitations and Potential Improvements". In: *Photonics* 12.5 (May 2025), p. 513. ISSN: 2304-6732. DOI: [10.3390/photonics12050513](https://doi.org/10.3390/photonics12050513).

- [4] Sean Dyer. “Development of Micro-Fabricated Vapour Cell Technology for Compact Atomic Devices”. University of Strathclyde, 2024. doi: [10.48730/VBWZ-7J94](https://doi.org/10.48730/VBWZ-7J94).
- [5] Moustafa Abdel Hafiz. “Development and Metrological Characterization of a High-Performance Cs Cell Atomic Clock Based on Coherent Population Trapping”. Theses. Université Bourgogne Franche-Comté, June 2017. URL: <https://theses.hal.science/tel-01809998> (visited on 11/24/2025).
- [6] Rachel Cannon. “Miniaturised, High-Reliability Lasers for Quantum Technologies”. 2024. doi: [10.48730/hwv6-g295](https://doi.org/10.48730/hwv6-g295).
- [7] Martin Callejo et al. “Short-Term Stability of a Microcell Optical Reference Based on the Rb Atom Two-Photon Transition at 778 Nm”. In: *JOSA B* 42.1 (Jan. 1, 2025), pp. 151–159. ISSN: 1520-8540. doi: [10.1364/JOSAB.533904](https://doi.org/10.1364/JOSAB.533904).
- [8] River Beard et al. “Two-Photon Rubidium Clock Detecting 776 Nm Fluorescence”. In: *Optics Express*, Vol. 32, Issue 5, pp. 7417-7425 (Feb. 26, 2024). doi: [10.1364/OE.513974](https://doi.org/10.1364/OE.513974).
- [9] Andrew Daffurn, Rachel F. Offer, and Aidan S. Arnold. “A Simple, Powerful Diode Laser System for Atomic Physics”. In: *Applied Optics*, Vol. 60, Issue 20, pp. 5832-5836 (July 10, 2021). doi: [10.1364/AO.426844](https://doi.org/10.1364/AO.426844).
- [10] Nicola Agnew et al. *Practical Primary Thermometry via Alkali-Metal-Vapour Doppler Broadening*. July 24, 2025. doi: [10.48550/arXiv.2505.24854](https://doi.org/10.48550/arXiv.2505.24854). arXiv: [2505.24854 \[physics\]](https://arxiv.org/abs/2505.24854). Pre-published.
- [11] *Alkali D Line Data*. URL: <https://steck.us/alkalidata/> (visited on 11/24/2025).