The Magnesium Experiment

On this page you will find information about the magnesium experiment, manuals, instructions for certain sub-systems etc.

- Todo
- Power Failure - Emergency Plan and Check-List

Results and Important Values

Timeline (Begin: 21.12.16)

Changes at the Experiment:

- 1st homogenous Coils with Copper band: 21.12.16
- Waist measurement: clock laser: 23.12.16: Waist position was not in the center of the chamber
- Waist measurement: clock laser: 23.01.17: collimation of clock laser
- Measurement: 3P1 splitting: 24.01.17 new frequency of double pass aom: 104.8365 MHz
- Waist measurement: clock laser: 30.01.17: clock laser focused 174um @ 20.4 cm; atoms @ 26.5cm
- 2nd homogenous Coils with Copper band: 06.02.17
- Reduced lattice waist: 75.75um : 20.02.17
- Waist measurement: Lattice: 66.88um +/- 4.4

Reducing the linewidth: Measurements:

- Linewidth vs lock power: 13.02.17
- Linewidth vs Density; Linewidth vs variation of first ramp; Linewidth vs B-field; Linewidth vs lattice power; Linewidth vs 2nd ramp: 15.02.17
- Linewidth vs lattice power; Linewidth vs clock laser power: 26.02.17 (Saturday)

Preperation for the frequency measruements:

- 2nd Order Zeemann: 30.01.17
- Clock laser AC- Stark measurement: 01.02.17
- mj Splitting: 2nd copper band coils: 07.02.17; with DiffAmps: 09.02.17
- Stability analysis: clock laser locked to the atoms: 3.8*10^-16@ 700s : 27.02.17

Devices

- Cameras
- Lasersystems

- Vacuum
- Coils
- Power meters

AOM´s

Informations are based on Datasheets found in our office. I did not check if all AOM do excist or are working!

- **IntraAction:**
- **ASM-1501M3**: 150+-40 MHz for 257 nm and 1mm Dia beam: Is in use at SHG 2.
- **ASM-1501M3**: 150+-40 MHz for 257 nm and 1mm Dia beam: Is broken.
- **ASM-1501LA3**: 150+-40 MHz for 266 nm and 1mm Dia beam: Is available.
- **ASM-852-5**: 85+-15 MHz for 326nm and 2mm Dia beam: Is available.
- **ASM-80**: 80+-15 MHz for 440 - 700nm
- **Neos Technologies:**
- **N35085-0.5**: 85 MHz for 400 - 540nm
- **Isomet:**
- **Isomet 1205C-20**: 65 - 95 MHz for 442 - 1060 nm and 2mm Dia aperture: Is available.
- **Isomet 1205C-20**: 65 - 95 MHz for 442 - 1060 nm and 2mm Dia aperture: Is broken.
- **Isomet 1205C-20**: 65 - 95 MHz for 442 - 1060 nm and 0.75mm Dia aperture: Is available.
- **Crystal Technology:**
- **AOMO 3080-120**: 80+-20 MHz for 442 - 633 nm and 2.5mm * 1mm Dia aperture: Is available.
- **AOMO 3220-120**: 220+-60 MHz for 413 nm and 3mm Dia aperture: Is in Use at SHG 1.
- **AOMO 3350-120**: 350 MHz for 488 - 532 nm and 3mm Dia aperture: Is available.
- **AOMO 3350-120**: 350 MHz for 488 - 532 nm and 3mm Dia aperture: Is broken.
- **AOMO 3080-198**: ??? MHz for 1064 nm and 3mm Dia aperture: Is available.
- **unknown:**
- **3080-4**: ??? MHz for ??? nm and ?mm Dia aperture: The enclosure is missing.

Ther are also Datasheets of other companies like:

- **IntraAction** 3x Model AOM-80, 80+-15 MHz, 440 - 700 nm and 1mm Dia aperture.
- **Isomet** 2x Model 1250C-2, 80 MHz, 442 - 1060 nm and 2mm Dia aperture.
- **Isomet** 1x Model 1250C-2, 200+-50 MHz, 442 - 1060 nm and 0.75mm Dia aperture.

This are not listed yet. Fell free to complete this list!

Old Lab books in the Mg lab

The old Lab books from 2004 onwards are kept in the Mg lab in the small wardrobe on top of the optics wardrobe which is used for the fiber optic components. The following lab-books were there at

the time of this writing (07.08.2017):

- Karsten Moldenhauer (01.04.2004 - 09.11.2007)
- Jan Friebe (15.07.2004 - 09.11.2007)
- Karsten Moldenhauer (03.05.2005 - 07.03.2006)
- Magnesium (09.03.2006 - 14.08.2008)
- Moldenhauer/Friebe/Riedmann (20.08.07 - 19.01.2010)
- Andre Kulosa (01.2009 - 02.04.2013)
- Matthis Riedmann (20.01.2010 - 29.01.2015)