

285 nm-Laser (S-MOT)

The 285 nm Laser consists of a two-stage frequency doubled, raman-fiber-amplifier MOPA. The raman-fiber-amplifier is seeded by a diode laser.

- Laser-Diode current: .. mA
- Seed power (is displayed in the *FLPM RMU CCT 1.1.0.0* program): ~ 20 mW



Change values

Turning on the Laser

- Enable main-switch. Set key to standby.
- Wait for the LED to change the color from orange to green to orange (~15 seconds after turning on). Turn the key now.
- Start the program *FLPM RMU CCT 1.1.0.0* and select the checkbox of *Laser Enable*.
- The *Power Setpoint* **must stay** at *0.500 W*
 - Optimize fiber coupling to *Iodine Spectroscopy*. Transfer-efficiency > 70%
- Change *Power Setpoint* for 285nm SHG operation
 - 2 - 2.500 W for 100-150 mW directly after 285 nm SHG.
 - Do not exceed much more than 3.5 W

Locking to Iodine-Spectroscopy

- Start *DigiLock-Module Server* and connect to *S-MOT-Laser*
 - Push *Scan on* and *AutoLock*
 - Change the *Offset Value* to 0 V
 - Change the frequency with the piezo on the toptica rack electronics to be close to the iodine resonance (check with wavemeter)
 - Change the *Setpoint* (under *AutoLock*) to be in the middle of the error signal. Check, if the crosshair snaps to the slope.
 - Move the crosshair to the second slope, rightclick on press *PID: Lock to Slop*.

Lock-Paramters



Add parameters

Lasersystem - Typical power values

The 285nm SHG was build by Jan Friebe and is described in his diplomathesis.

570 nm-Laser

- Outputpower after cube to 285 nm-SHG: $\sim 1.2 \text{ W}$ @ 2.5 W
- Operationpower: $< 3 \text{ W}$
- Max outpupower: ??? W @ ??? W

Iodine spectroscopy

- Infront fiber: $\sim 38 \text{ mW}$ @ 0.500 W
- After fiber: $\sim 29 \text{ mW}$ @ 0.500 W (= 400 mV @ 0.500 W) [efficiency $\sim 70 \%$]
- Infront fiber: $\sim 220 \text{ mW}$ @ 2.500 W
- After fiber: $\sim 160 \text{ mW}$ @ 2.500 W (= 2 V @ 2.500 W) [efficiency $\sim 70 \%$]

285 nm-SHG

- Outputpower: $\sim 100 \text{ mW}$ @ 2.000 W
- Stabilized power (infront AOM): **80 mW**
- Power behind the AOM: **43 mW** @ 2.000 W (efficiency $\sim 50 \%$)
- Power for the Zeaman-slower: **10 mW**
- Power behind the mystical mirrow: **30 mW**

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