383 nm Laser system (T-MOT)

The 383 nm laser system consists of 767 nm lasers which are then frequency doubled to achieve 383 nm light.

External Cavity Diode Laser (ECDL)

For 767 nm lasers, ECDL in Littrow configuration is used. Typically we used the laser diodes from Eagleyard Photonics: EYP-RWE-0790-02000-1500-SOT02-0000

Recently, Eagleyard has replaced these with new laser diodes: EYP-RWE-0760-02010-1500-SOT12-0000

TA

- Output Power: 1.5 W
- Input Current: 2 A
- Injection Power: 32 mW
- Power behind 30dB Isolator: 1.05 W

Fiber

- PMC-780-5,0-NA012-3-APC-200-P
- Incoupling: 67%
- Power behind fiber: 700 mW

Frequenzy doubling

LBO-Crystal

- Lenght: 15 mm
- AR coating

Resonator

- Ring resonator (double Z configuration)
- Length: 280mm
- Curvature of mirrors: 50 mm (S3 and S4)
- Distance of mirrors: 64 mm
- Waist: 30µm (crystal), 130µm (long arm)
- Transmission: TS3 = 0.049%, T1 = 1.2 %
- ENL = 6.1*10^(-5)/W
- Linear losses: eL = 0.85(0.15) %
- Finesse: F = 270

$$E_{NL} = \kappa L_c k_1 h_m (B,\xi) $$

Stabilisation

- PDH-Method
- Error signal at about 20 MHz