

MLLTRAP @ DESIR:



➤ Specific technical requirements:

- electric power needed: 24x 230V (16A), 4x 380V (16A), 1x 380V (32A).
- cooling power: max. power dissipation 10 kW
- liquid Helium consumption: ca. 1500 liter/year (5 x 300 liter)
- liquid Helium recovery system needed
- liquid nitrogen: ca. 3000 liter/year (30 x 100 liter, close access desirable)
- nitrogen gas: for the venting of a (ultra-)high vacuum system a (dry !) nitrogen gas line to the experimental area would be very helpful
- de-carbonized water (5 bar) ? No
- de-mineralised water (8 bar, 15 bar)? Only 8 bar circuit needed with ca. 90 liter/hour.
- standard water: No
- compressed air (6-8 bar) ? Yes. Ca. 10 individual connections required
- maintain of power: not required (nice, but not mandatory)
- weight on floor: heaviest part is trap magnet (filled with IN_2 and IHe : about 2.5 tons, including the support stand, spread over ca. $1.5 \times 1.5 \text{ m}^2$),
Multi-Reflection-TOF-Spectrometer ca. 1000 kg on about 1 m^2 .
In general 1000 kg/m^2 are sufficient for the ground floor of the trap setup.
Total weight: ca. 5-6 tons
- max. size on floor: $8 \times 5 \text{ m}^2$
- max. height: ca. 4.5 m (based on beam height of 1.75 m)
- climatization: stable temperature +/-1 deg.

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Other requirements:

- safe mounting of He gas bottle
- big entrance gate (4 * 4 m²): yes
(facilitates delivery of trap magnet as well as regular delivery of liquid helium dewars)
- crane running over the whole DESIR Hall, max weight? Yes (5 tons)
- air conditioning? Desirable would be temperature stabilization in hall to +/- 1 degree
- Ethernet connection
- optical alignment capabilities (alignment posts for telescope mounting ?)
- pump exhaust system
- assembly room requirements: yes, ca. 10m²
- storage space: yes , ca 10 m²
- specific safety requirements: strong magnetic field (7 T), liquid helium

1 Technician for technical support !

Financial aspects of MLLTRAP:



Penning trap system:

→ operational

- superconducting 7 T trap magnet: 230 kEUR existing
- vacuum, electronics for trap : 150 kEUR existing
- diagnostics, ion source, deflector: 25 kEUR existing

Isobaric purification outside Penning trap:

- quadrupole mass analyzer : 15 kEUR existing
- multi-reflection TOF spectrometer:

→ presently under construction: ca. 180 kEUR, 50% financed in 2008
rest in 2009/10

partners: Univ. Giessen (W. Plass et al.)

Highly charged ions:

- q/A separation : ca. 150 kEUR, 70% financed in 2008
- EBIS ca. 250 kEUR not yet financed

High voltage platform for DESIR: ca. ? kEUR, not yet financed

MLLTRAP @ DESIR: Schedule



- 2009 - ca. 06/2012: completion of MLLTRAP facility in Garching
 - setup of MR-TOF spectrometer
 - setup of q/A separatormeasurements at MLL Tandem

- ca. 06/2012: MLLTRAP available for transfer to DESIR
- 06/2012 - 12/2012: installation and (offline) commissioning of MLLTRAP at DESIR
- 01/2013: MLLTRAP ready for first online experiments