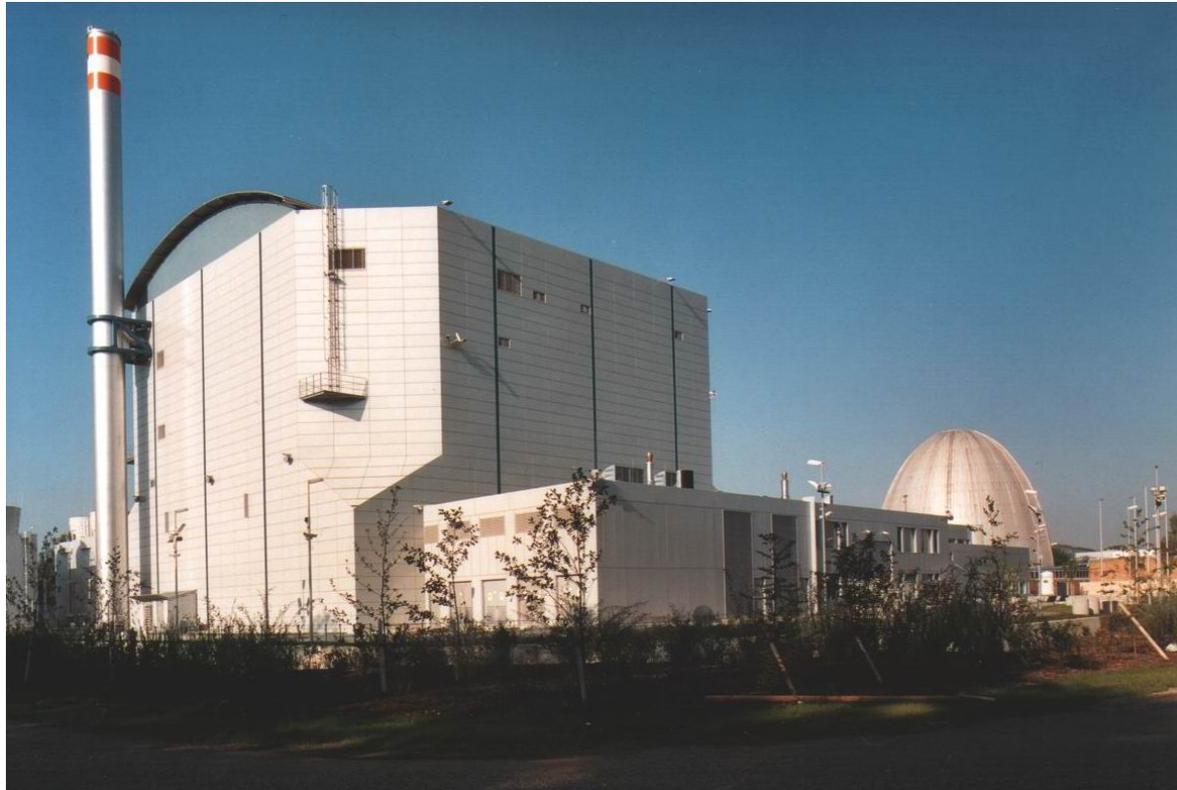




Forschungsneutronenquelle Heinz Maier-Leibnitz (FRM II)



Sample environment at FRM II





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Sample environment at FRM II

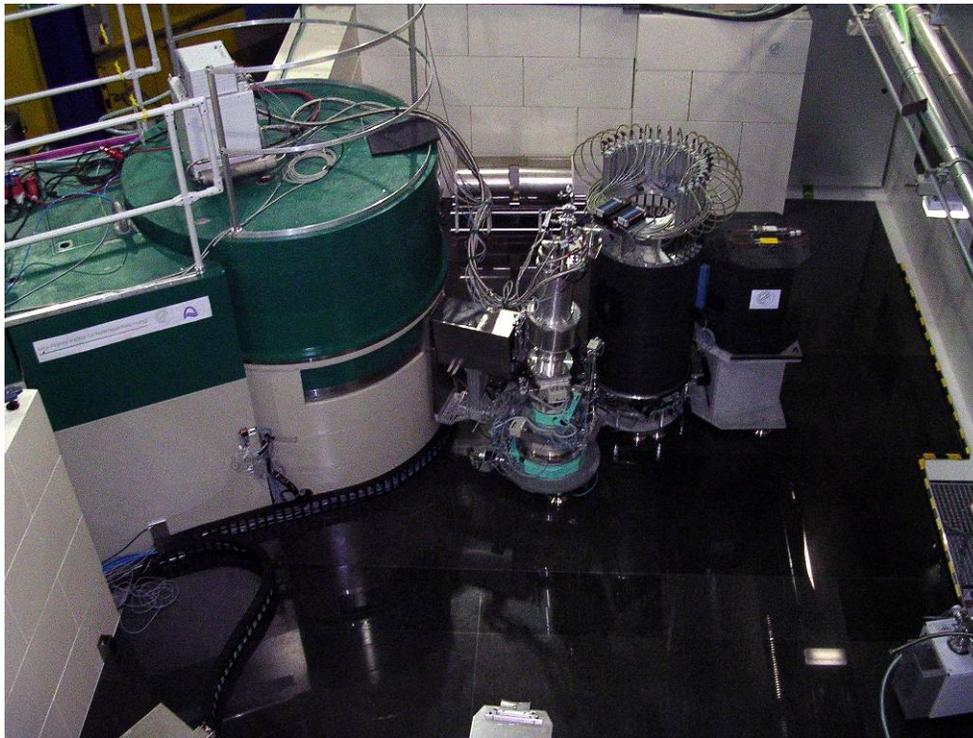
The Neutron Source Heinz Maier-Leibnitz is now in the 8th reactor cycle. Since the start of operating, two years ago, our standard cryostats are tested by the instruments. Especially by the triple-axis-spectrometer TRISP. On this instrument the CCR was running mostly with a ^3He -Insert. Because of the successful experience the Max-Planck-Institute decided to order a CCR for themselves. Due to the modular design of our standard cryostat CCR changes are easy. It is also possible to open the cryostat, change a thermometer or heater, close it again and finally evacuate the dewar within one day. The parts of the cryostat can be stored like spare parts. So repairs can be done very quick. Inside the dewar is enough space for add-ons like the cooling trap and the 1K-Booster. Only the cold-head is from VERI-COLD Ltd. All the other parts are our own design. We have the full possibilities to modify the whole cryostat if it is needed.



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CCR on TRISP
**Neutron Resonance Spinecho
Tripleaxis Spectrometer**

By courtesy of Dr Th. Keller



CCR-4 with
3He-Insert
on TRISP

By courtesy of Dr Th. Keller

H.Kolb, Workshop on Sample Environment at Neutron Scattering Facilities, Sept. 6-8 2006, Argonne Ntl.Lab., Argonne, Illinois, USA



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Current developments on sampletube-closed-cycle-cryostats:

- adaptations to the requirements of some instruments
- 1K-Booster for the CCR-sampletube



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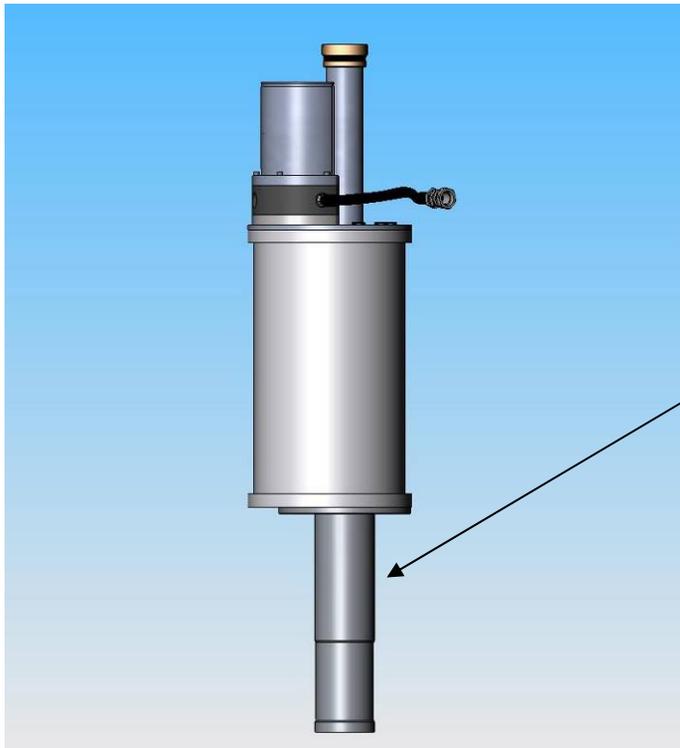


Sample environment at FRM II

For some instruments it was necessary to adapt the standard closed-cycle-cryostat on the special requirements.

- At the time-of-flight instrument TOFTOF the tail of the sample tube was modified. Simultaneous to this, an adapter for the sample chamber was required.
- For the dry-magnets a smaller dewar was necessary.
- Due to the requirements of some instruments a 1K-Booster Stage in the sample tube is developed.

Sample environment at FRM II



Modified dewar for using with magnets

Sample tube tail, radiation shield tail and dewar tail can be easily adopted to various requirements

E.g to fit inside the warm bore of magnets, the dewar diameter on the tail is 90mm.

If needed, the dewar can be changed easy to the base configuration.

The special extension can be used with every standard CCR.

The length of the tail is 330mm.



Dry Cryomagnet 7.5 Tesla
with inserted CCR-1



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Sample environment at FRM II



Superconducting Magnet Controller

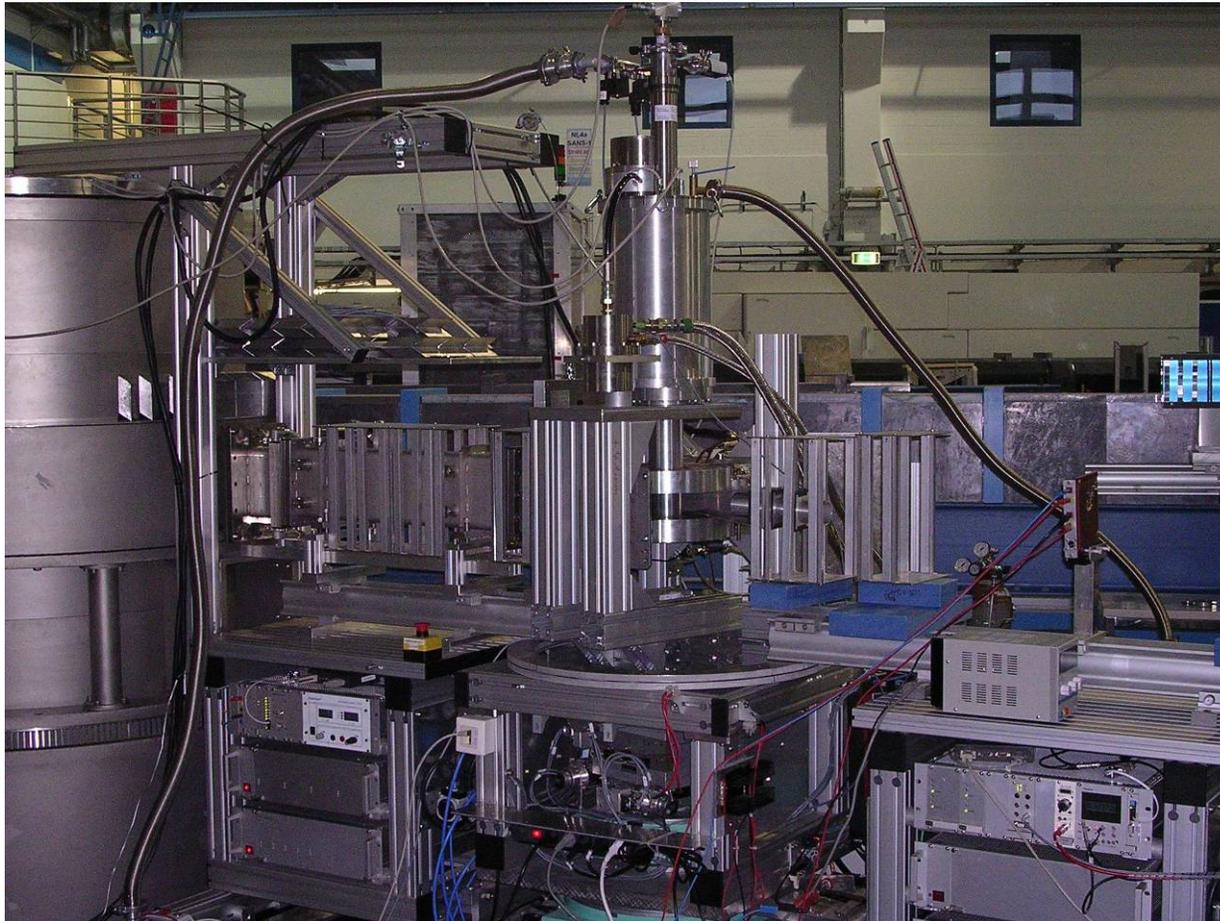


**CCR-5 on MIRA
Very-Cold-Neutron- Spectrometer**

By courtesy of Dr R.Georgii



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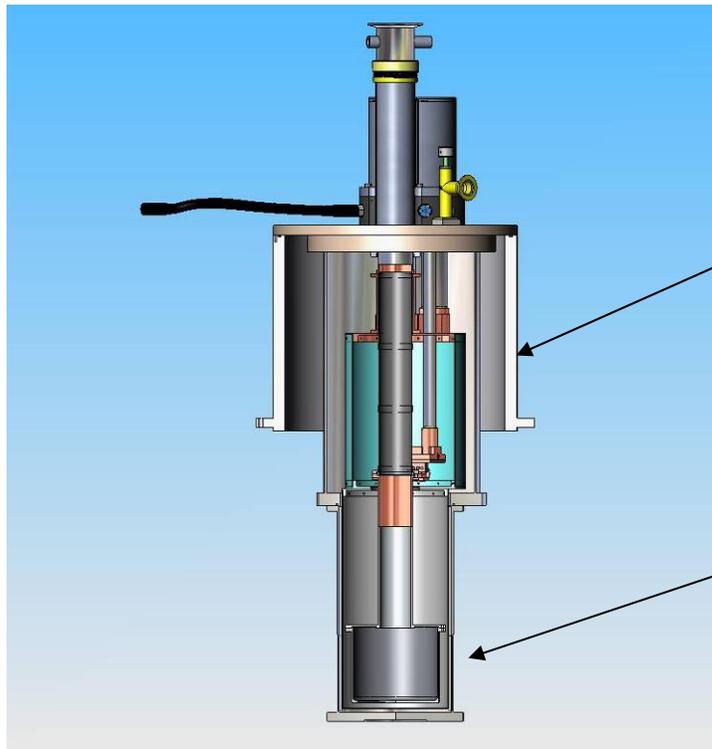


CCR-4 on MIRA

By courtesy of Dr R. Georgii

H.Kolb, Workshop on Sample Environment at Neutron Scattering Facilities, Sept. 6-8 2006, Argonne Ntl.Lab., Argonne, Illinois, USA

Sample environment at FRM II

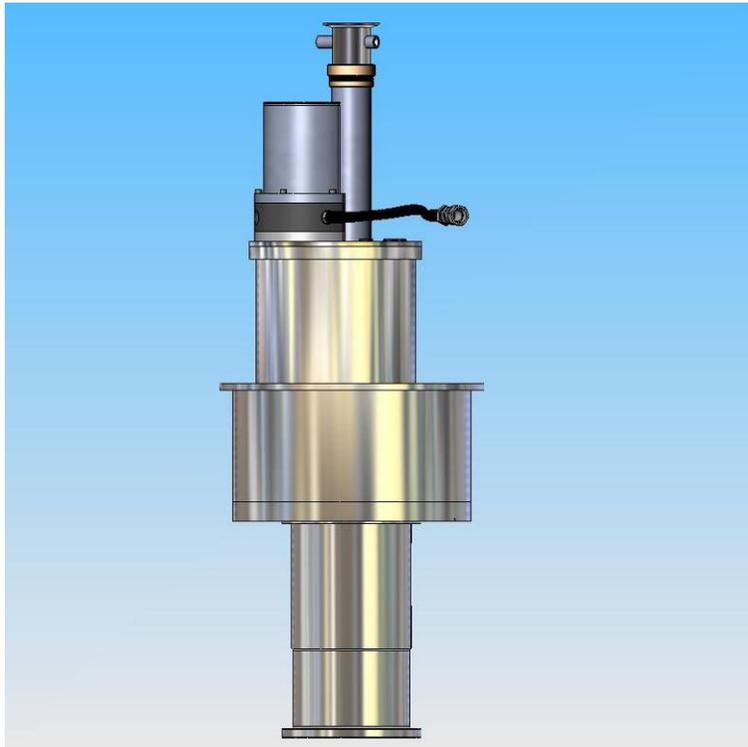


Sample-chamber-adapter for TOFTOF
**High resolution direct geometry
time-of-flight spectrometer**

This adapter can be used with every standard CCR. The use of cryostats is much more flexible in contrast to special built dewars.

The special extension of the sample tube was necessary to reduce background due the sample tube. The diameter is three times more than in the base onfiguration. The bottom, the top and sections of the perimeter are covered with Cadmium to avoid secondary scattering

Sample environment at FRM II



Adapter for the instrument chamber on SPHERES
SPHERES is the neutron backscattering spectrometer
of the JCNS ([Jülich Center for Neutron Science](http://www.jcns.juelich.de))
at the FRM-II

- simple installation
- usable with every standard CCR

Sample environment at FRM II

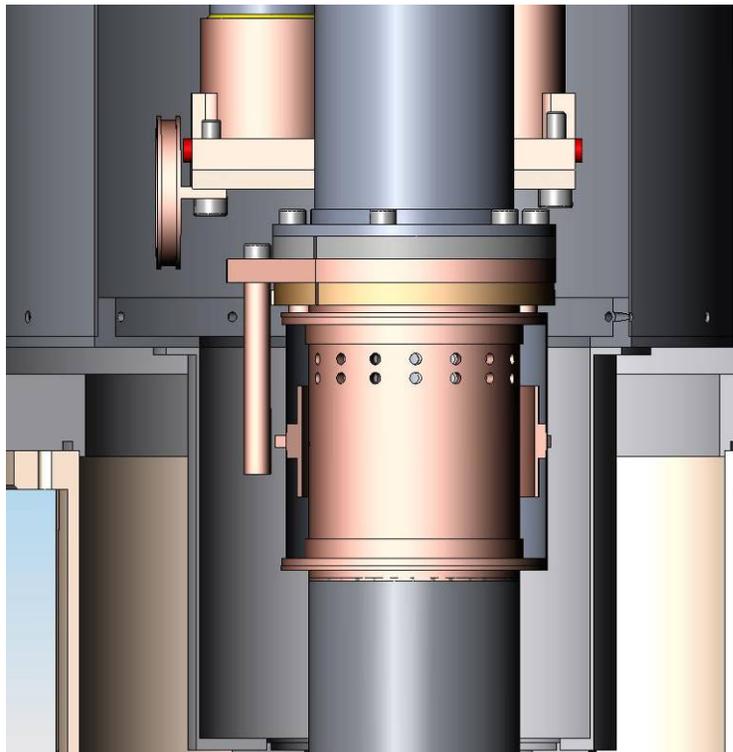


1K-Booster-Stage

At the request of scientists which are used to have cryostats with a temperature range of 1.5 to 300K, a 1K-Stage is developed.

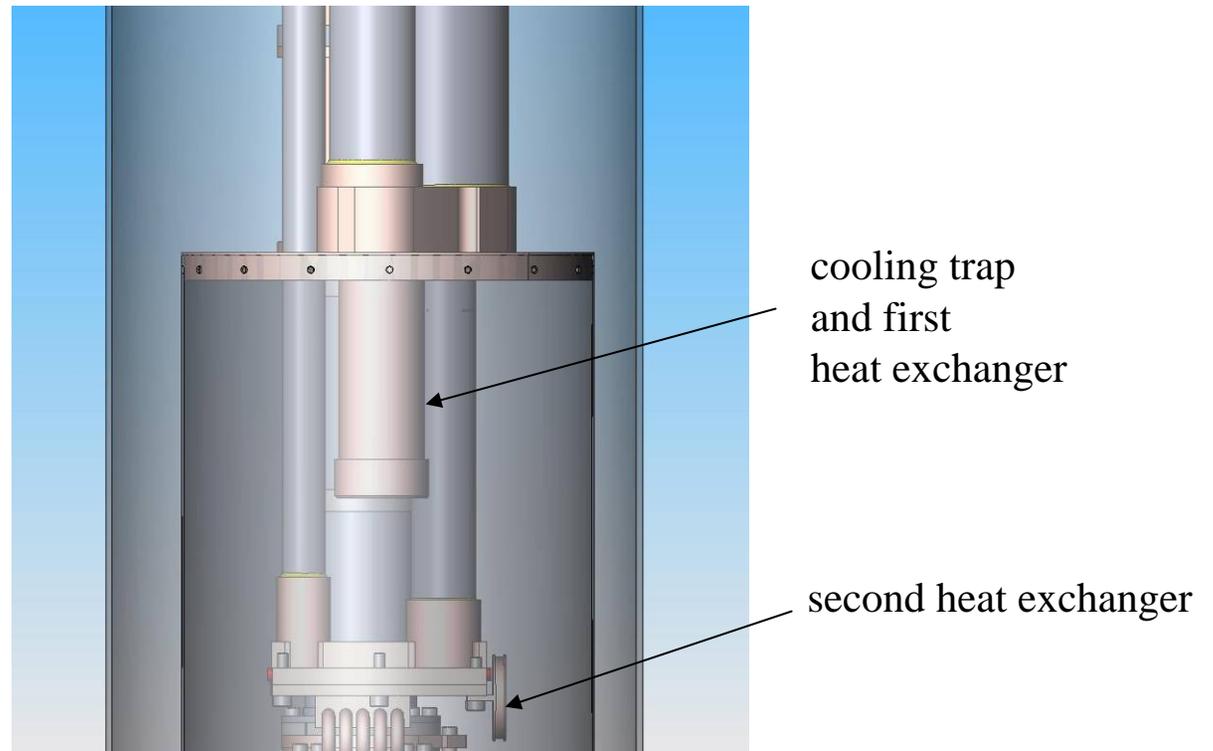
In the case of the CCR it works as a heat-switch too.

Sample environment at FRM II



4He-Gas comes from a pressure bottle by a capillary into the dewar. At the first stage temperature level a cooling trap is installed which works as a heat exchanger too. Condensation of 4He takes place in the second stage heat exchanger. Liquefied 4He comes to the 1 K- pot encircling the sample tube. Sample tube works as pumping line.

Sample environment at FRM II



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Sample environment at FRM II



Life in Munich can be very hard