**Parallel Session Super-FRS** **on nc Magnets** (20181106 12:00-~16:00)/DRAFT

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Participants: Christina Will, Hanno Leibrock, Carsten Mühle, Sivaji Purushothaman, Martin Eibach, Denis Gudrow, Anatoly Utkin, Sonia Utermann (first part), Victor Varentsov (first part), Yuri Shatunov (first part), Haik Simon (minutes)

12-13: Dipole Presentation (H. Leibrock)

**Dipoles**

Q-BINP: Lubricant type? TFPE Oil (Flustar up to 1MGray) . Why not Graphite or similar ?  
 Recommendation by the supplier of gear boxes, no issue from radiation side, lubricant presence for  
 case of rare use.  
 Responsibility for design on GSI side, i.e. no technical issue.

Conditions in shielded tunel: Site shall accessible only occasionally for urgent maintenance.

Installation procedure : Support, lower yoke with chamber, top part

**No technical issues left (BINP ok)**

14- 15 Qudrupole Presentation (H. Leibrock)

**Q1a-Q1b combination**

Q-BINP: Will different types for Q1a 1b require different tools? - yes

Coil production: Winding scheme? Pan cakes (see attached document)  
(separation with standard length of Hitachi, loger would be Tyco cable)

**AI: GSI (H. Leibrock) provide details of winding idea and choice of direct cooling**(focus on molding form)

Installation procedure: Support, (frame with chamber and quad) – ok  
Q-GSI: Could system be prepared for being split up in two parts? - ok

General question:  
Why a directly cooled magnet is used? Cable with water duct infers potential difficulties  
**AI: GSI (H. Leibrock) provide details on indirect vs. Direct cooling.**

Q-BINP: Who produces cable? -   
Hitachi: GSI has contact via RIKEN,   
Q-BINP: What is the price per meter?

**AI: GSI (WPL)** shall find cable supplier and price (focus on Japanese suppliers and Tyco)

Q-BINP: Are the lifting bayonetts items that can be purchased (40t)?   
Shall it be an own design with related responsibility or a purchasing piece?

**AI: GSI (Ch. Will)** checks whether this is available

***Q-GSI: Can the same steel be used as for the dipoles – yes***

**QS combination:**

Installation sequence: support –yellow frame with installed magnets

Q-GSI: Can BINP chamber be alreday be integrated?   
 (Full system delivery avoids interface and pre-assmbly issues)

**AI: BINP Can chamber integration be foreseen at BINP premises ?  
AI: GSI(S. Puroshotaman/H. Weick) Check chamber dimension and shape**

Q-BINP: How should water interconnections between lower and upper part be done (swagelock)? -   
 Metal seals required, wleding/cutting shall be avoided

Full assembly at BINP would be favourable

**Magnet Q2-S scheme ok, no show stopper (full integration tob e checked),   
prerequisite: cable procurement conditions clarified.**

**Sextupole Beam Catcher combination**

Installation sequence: Support – Internal frame with Sextupole (potentially with beam pipe)

**AI: GSI+BINP Scope definition: Sextupole+internal frame ((+ chamber) + Support)**Clarification of Interfaces: to Beam catcher (CMERI) & Shielding

**No obvious issues, final scope & interfaces to be clarified**

Conclusion/Remaing issues

**Question to management:   
 Can a supporting R&D contract be closed (e.g. on coil production) in order to further clarify  
 price tags and remove technical uncertainties? – AI (BINP): Clarify necessary R&D items**

**Overall schedule:**

**Dipole schedule / Multipole schedule**

Attachments:

* Presentation
* Information Material on coil winding