

# Collimator Design Meetings

## Minutes of the meeting 50 (18/11/2004)

**Present:** Aberle, Assmann, Bertarelli, Calatroni, Hänni, Kadi, Losito, Mayer, Perret

**Minutes # 49:** No remarks on previous minutes

### RF CONTACT FINGER DESIGN

1. Alessandro briefly presented some plots showing the level of energy deposited in the region of the transition RF contacts (exit bloc end), based on data for the "hottest" TCS extrapolated from latest Fluka simulations (and showing a deposition pattern completely different from initial "symmetric" assumptions). The plots show a level of deposited energy which is worryingly high, in particular close to the location where fingers lie in the present prototype configuration. See [PowerDeposition@FinalCrossSections.pdf](#) for details.
2. A discussion is held on the issue. On one hand it would be beneficial to move the contacts on the back surface of the jaw, creating also a direct contact with the cooling elements, on the other this would lead to a major redesign and would create a possibly detrimental step in the RF current path.
3. Roger informed that the RF test bench should be ready by end of November.
4. Actions taken:
  - a. Check with V. Vlachoudis to verify if such a high level of energy deposition is concerning only one/few collimators or more (**S. Calatroni**)
  - b. Check with RF people (F. Kaspers / ABP people) if a different design, meaning an abrupt step in the current path is acceptable and what is the proposed design to comply with the high deposited energy (**R. Assmann**).

### MANPOWER IN DESIGN OFFICE

1. Roger stated once again that he cannot complete the series drawing unless all the lacking informations are provided (for details see [minutes #45](#))
2. Manfred will take the necessary steps to request a new designer to support Roger in the finalization of series drawings for TCS and TCP, supports and "auxiliary" collimators.

### DATABASE OF RAW MATERIAL TO BE ORDERED (OLIVER)

1. A list of material to be ordered with each responsible is now available on Oliver's public directory.

### MATERIAL ORDERING POLICY

1. Enrico will discuss next week with Th. Lagrange (FI/PI) a strategy to order as quickly as possible all the necessary material for TCS and TCP.
2. The definitive quantities to include in the material request of offers and orders have been given by Ralph. All in all (including spares) the relevant quantities are for 74 collimators plus 28 as option. At the moment of order, separate budget codes shall be given for TCP/TCS and TCDI.

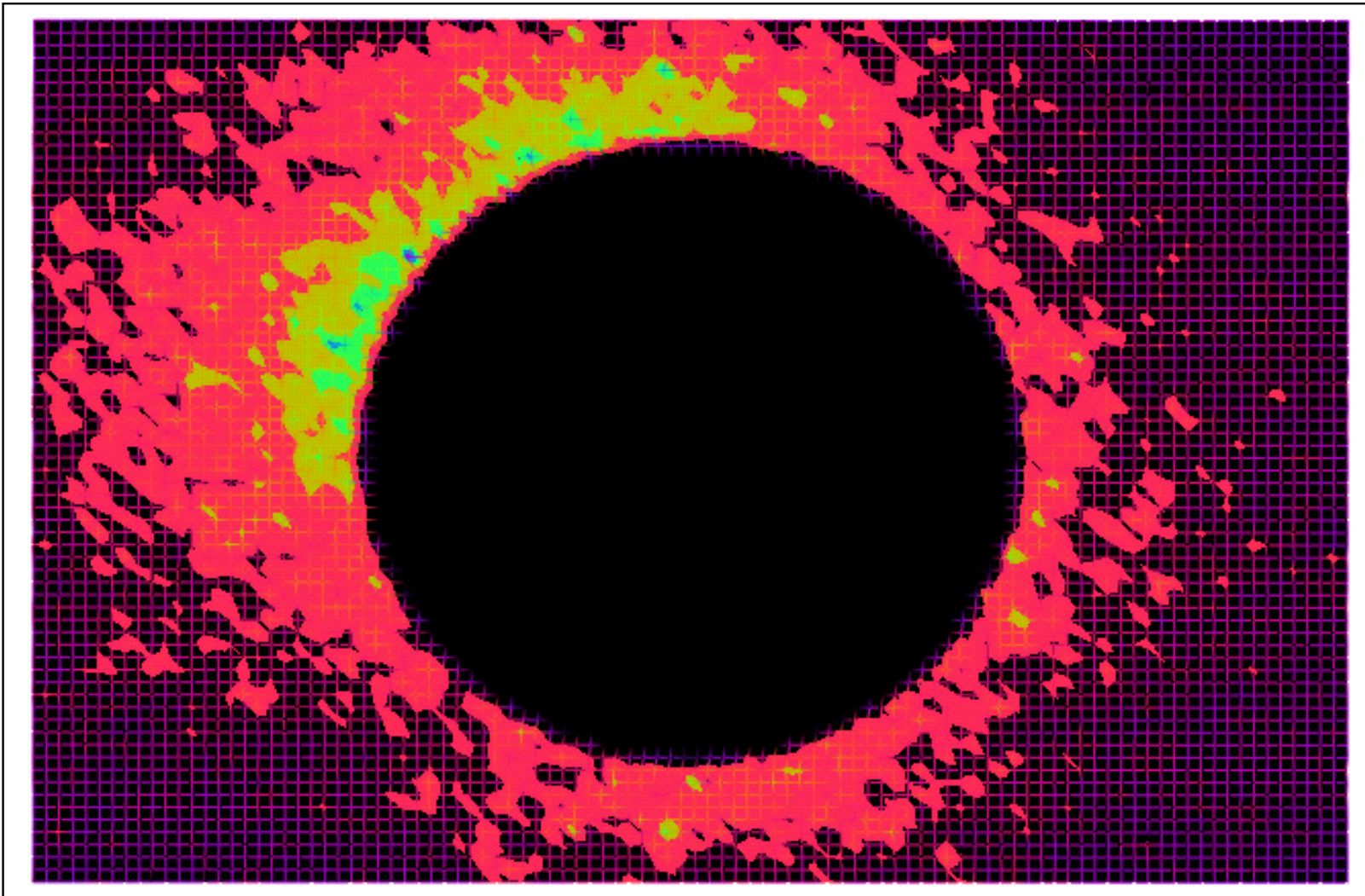
### AOB

1. Roger has informed that J-P Quesnel has raised the question whether the alignment aims should remain fixed with respect to the support (as always implied and foreseen by present design) or move with collimator, which would completely upset the support design. **Ralph / Oliver** should urgently contact Quesnel to clarify the situation (**urgent action**)
2. Alessandro informed that after his preliminary calculations, the required minimum effective torque for each step motor is **0.7 Nm**
3. It has been decided that the absorbed torque on the LSS5 prototype will be measured mechanically. Roger will prepare a sketch based on the pulley + weight system to be provided next week for execution to Patrice Françon.
4. Roberto announced that, according to his experience, no special grounding is necessary for the collimator motors. However, he will check with Fabrice (who raised the issue).

5. Roberto also informed that he could find some electrical plug-in systems which could survive up to 10 MGy. A clear assessment of the radiation dose onto the collimators is again necessary (**action V. Vlachoudis**)
6. Manfred informed that the water quick connections he ordered are on their way to Cern.

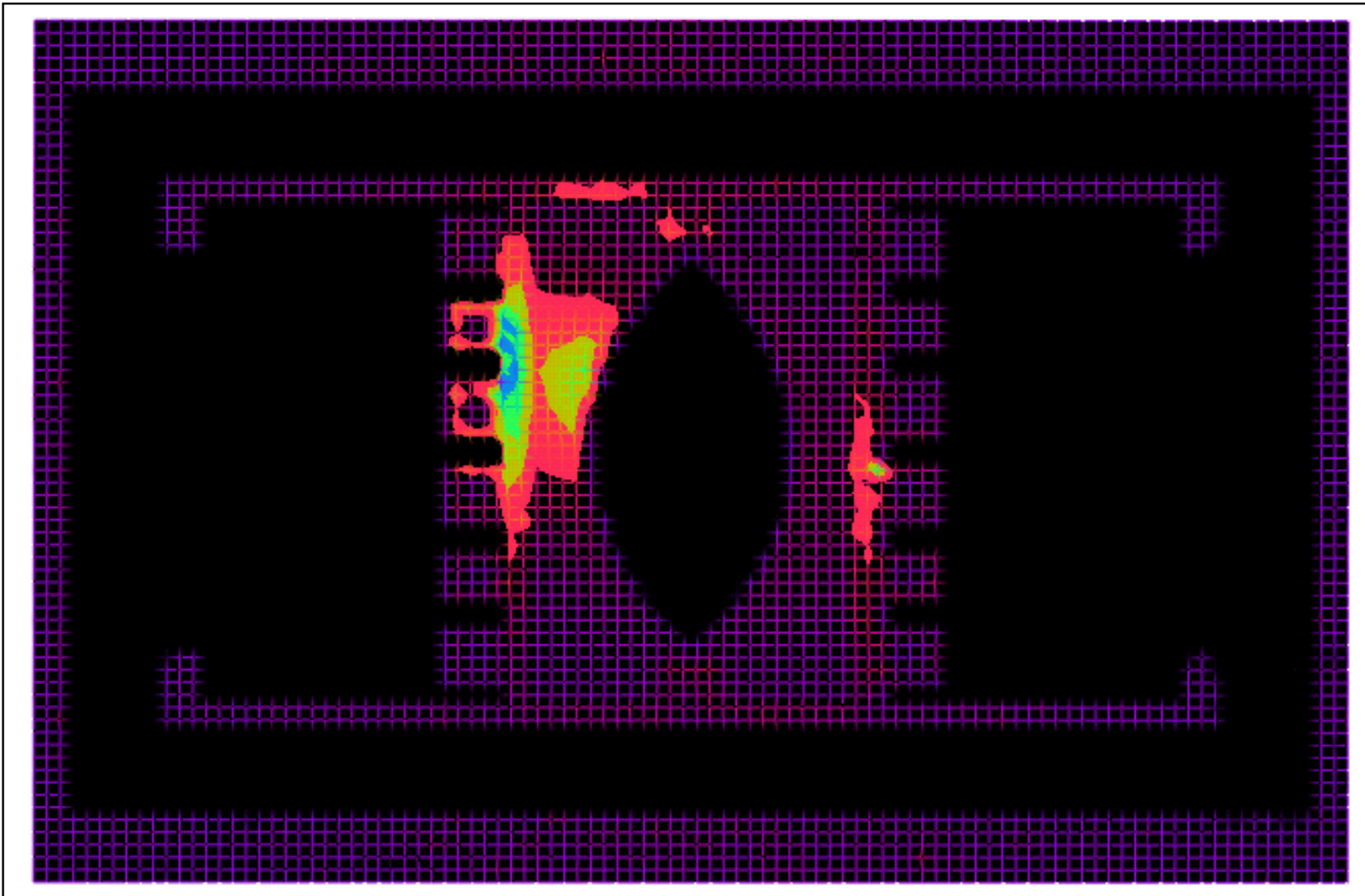
## **ACTION LIST to be followed up:**

Divisional request for motors MS	#31	Oliver, Fabrice, Stefano
Contact fingers – model for tests top and side	#34	Sergio, Roger
Play between motor spindle and jaw	#34	Roger
Non-symmetric heating of vacuum flanges	#34	Vasilis, Oliver, Miguel, Rathjen
"Remote control" collimator exchange	#35	Keith, Roger
Radiation issues – heat evacuation, air duct, space, shielding		Ralph
Detailed information on electrical plug-in and sensors ( <b>URGENT</b> )	#45	Roberto
Detailed information on water plug-in ( <b>URGENT</b> )	#45	Manfred
New Fluka simulation for 7TeV accident case	#47	Vasilis
Updated calculation on beam optics during transient	#49	Ralph
Acceptable RF design by RF people	#50	Ralph
Level of energy deposition on RF area	#50	Sergio
Check about alignment system requirement ( <b>URGENT</b> )	#50	Ralph, Oliver, J-P Quesnel
Radiation dose on electrical components ( <b>URGENT</b> )	#50	Vasilis, Roberto



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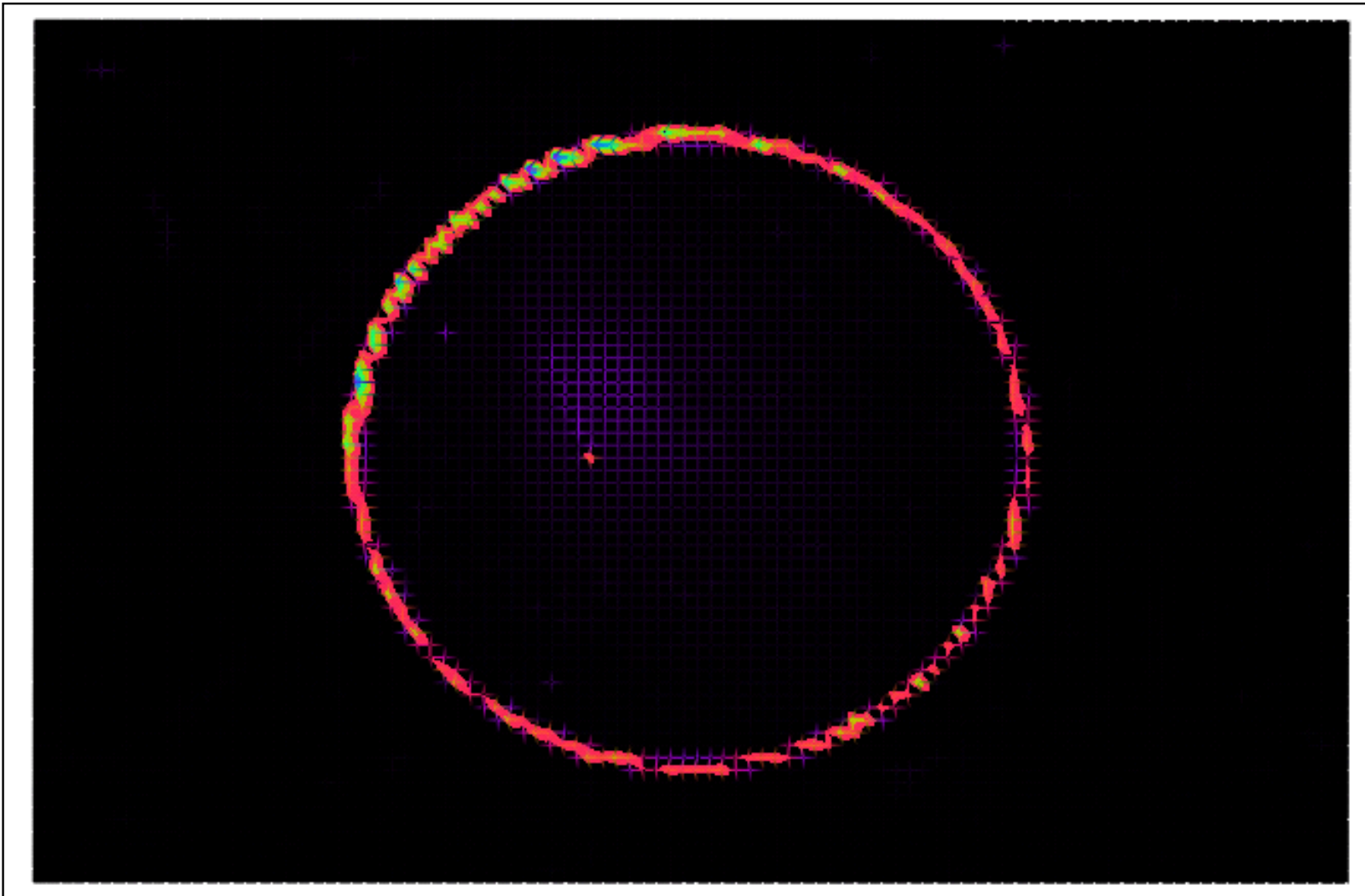
Exit Tank wall  
Maximum power density  $5.86 \text{ W/cm}^3$



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**Bloc cross section  $z=1195$  mm**

**Maximum power density  $26.58$  W/cm<sup>3</sup>**



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Exit Transition  $\text{Ø}100 \text{ mm } t=2\text{mm}$   
Maximum power density  $2.97 \text{ W/cm}^3$