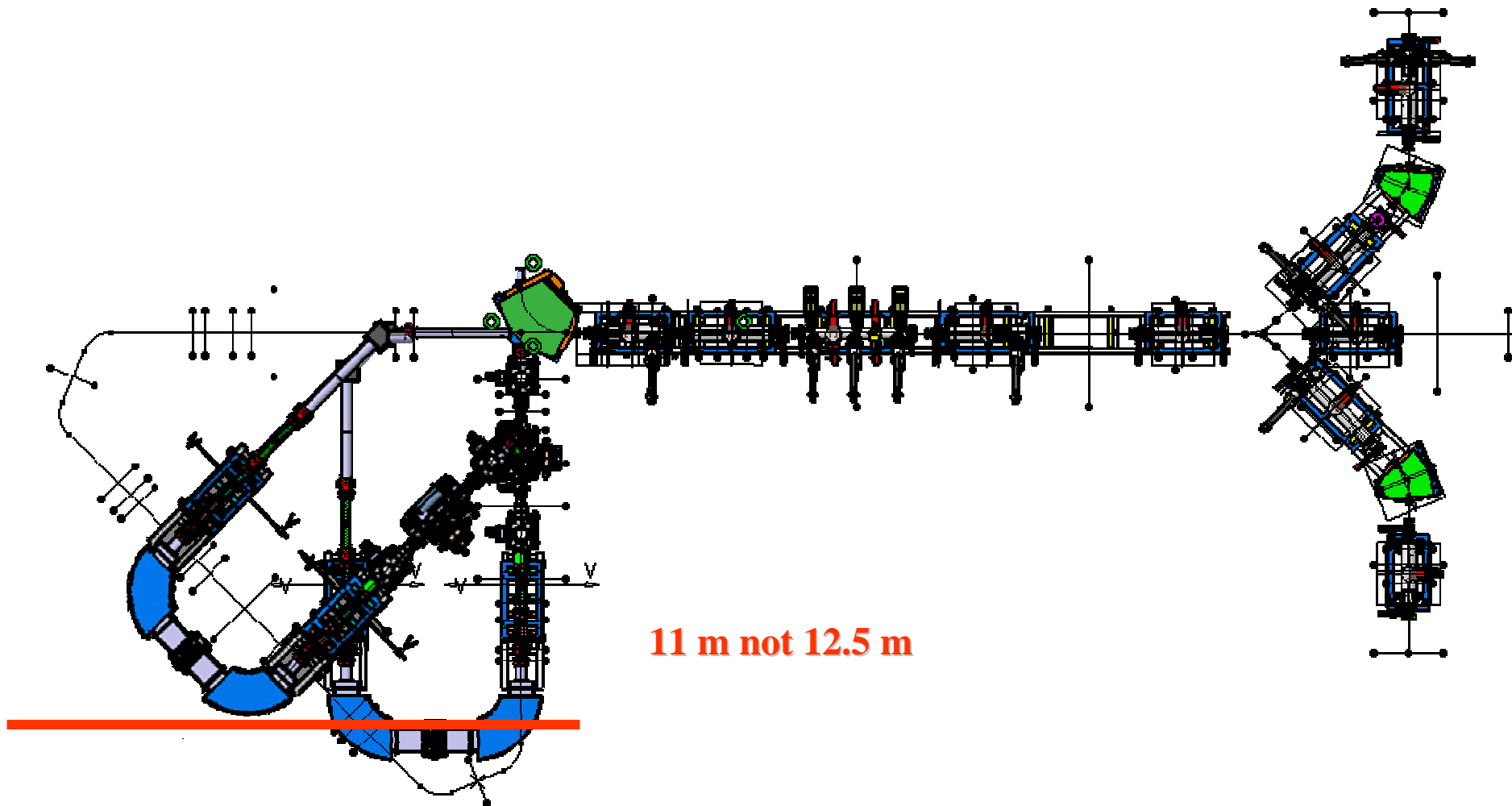


# High resolution separator HRS

**Teresa Kurtukian-Nieto**  
**CEN Bordeaux-Gradignan**

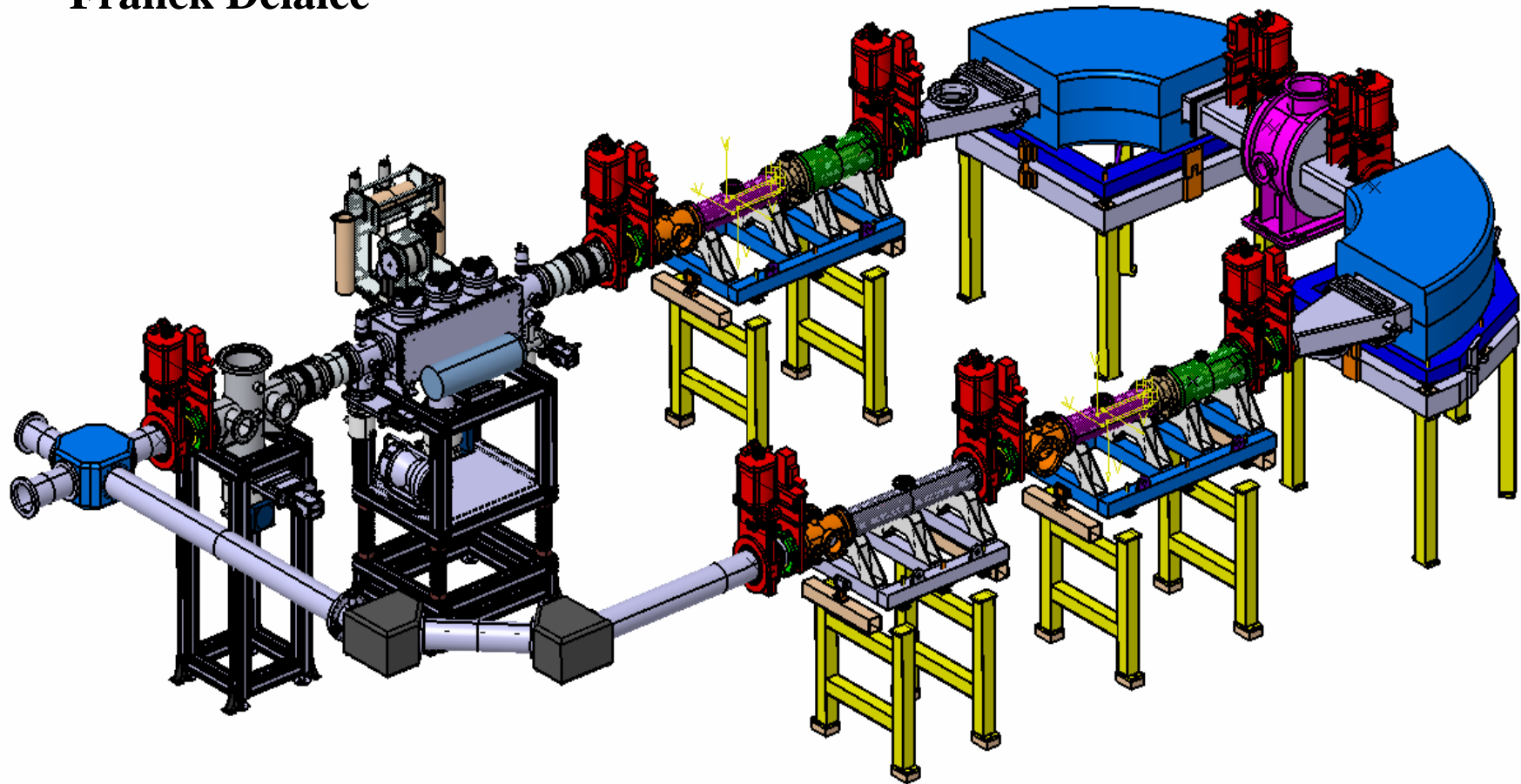
**DESIR Meeting, Manchester, UK**  
**September 23<sup>th</sup> 2010**

# HRS: Layout

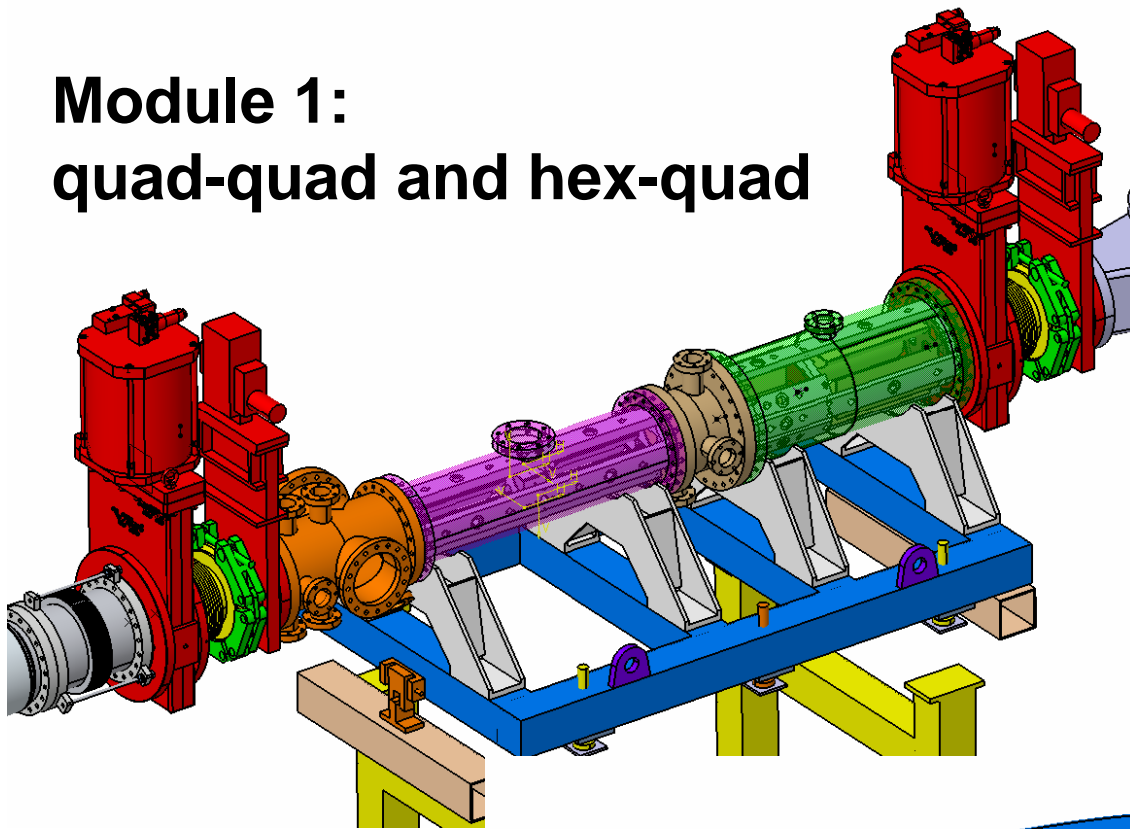


# Status of the project

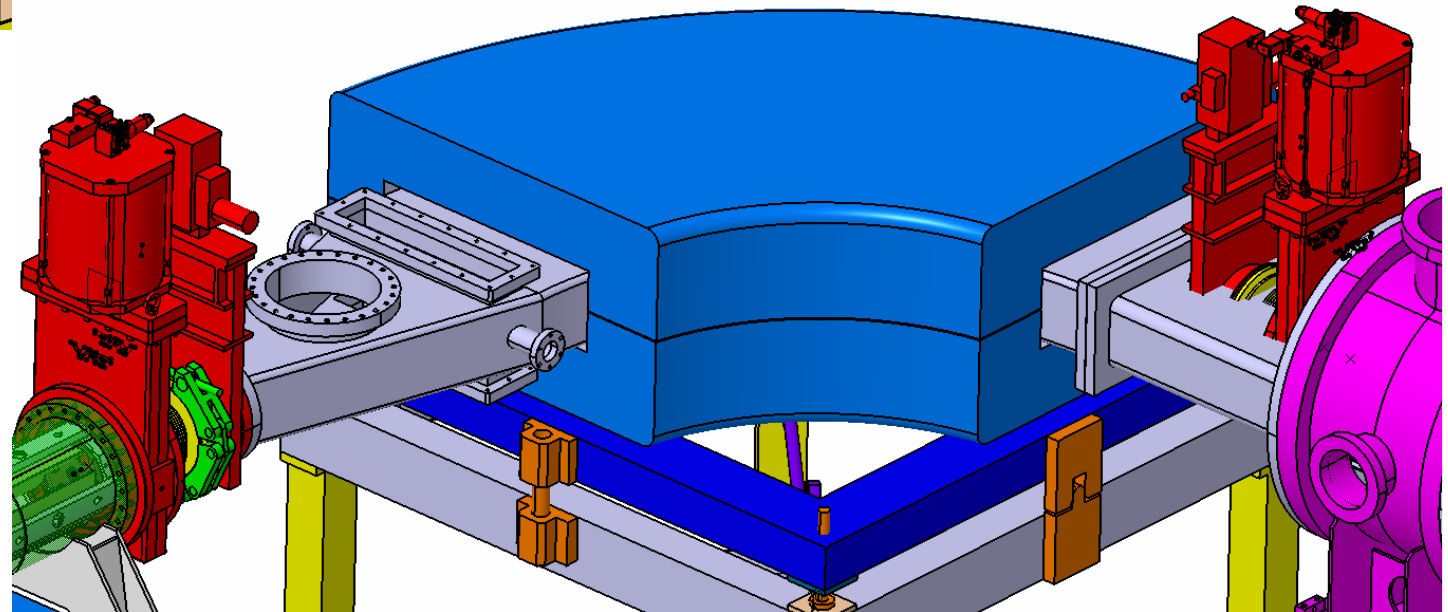
Franck Delaee



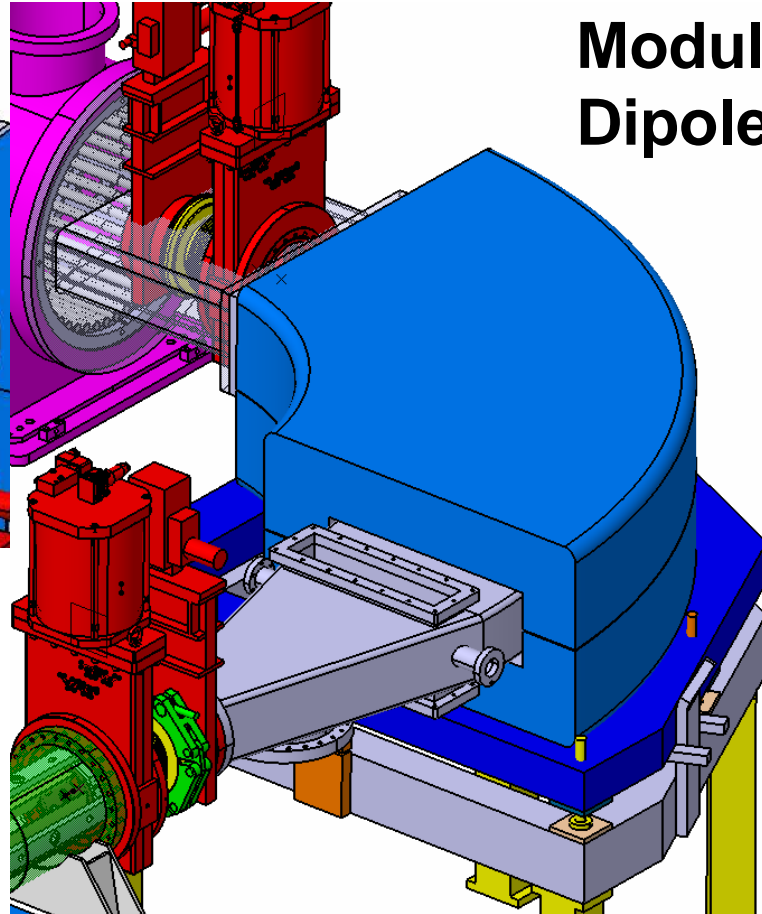
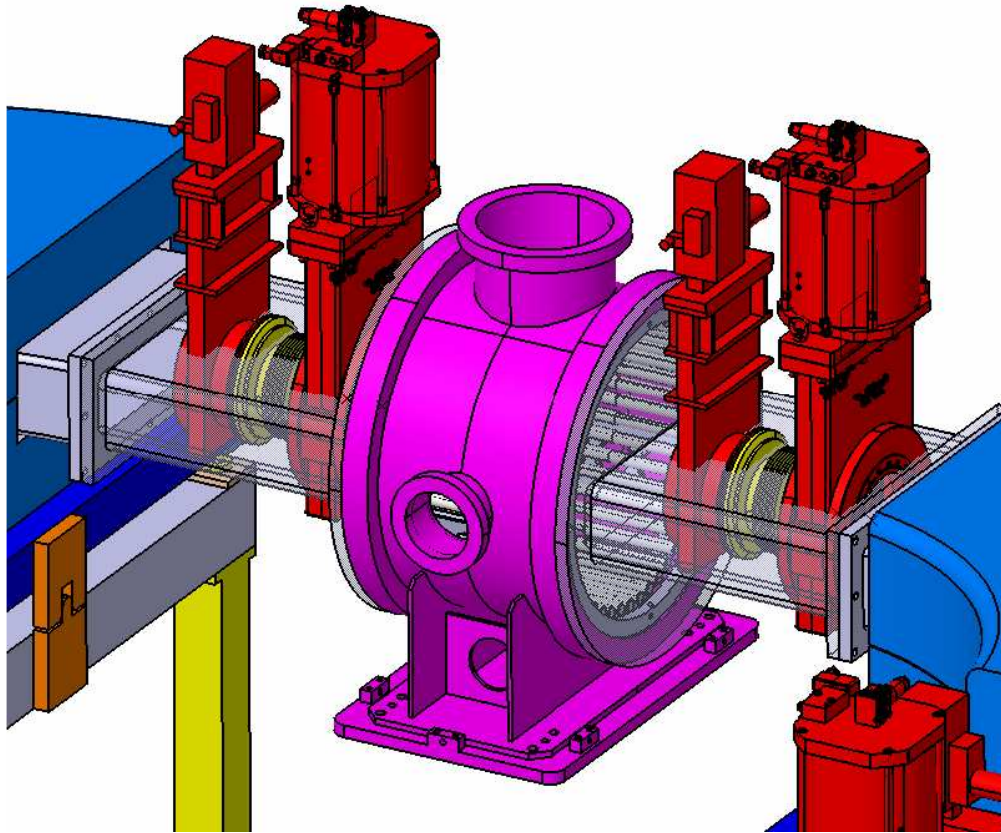
# Module 1: quad-quad and hex-quad



# Module 2: Dipole 1

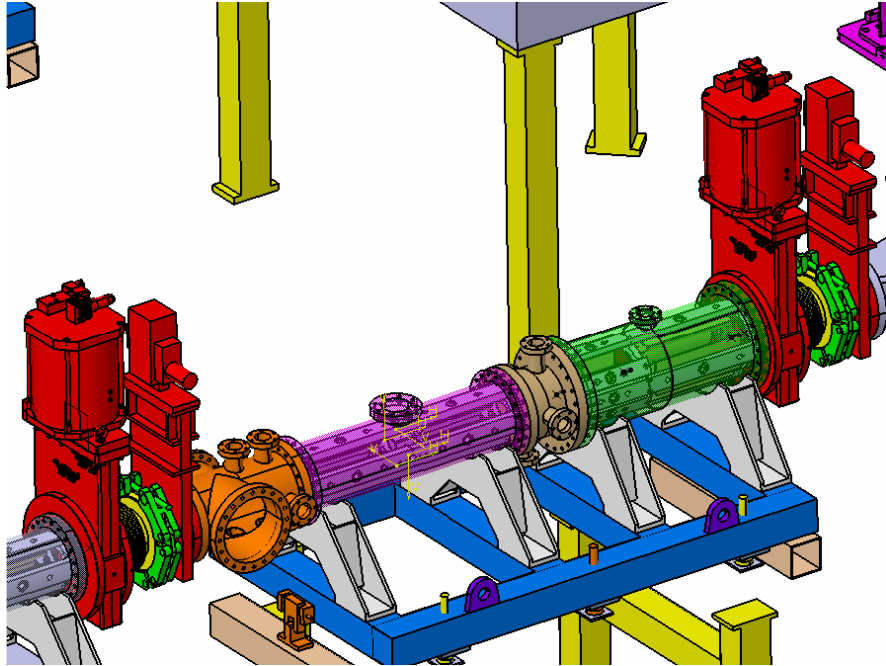


# Module 3: multipole

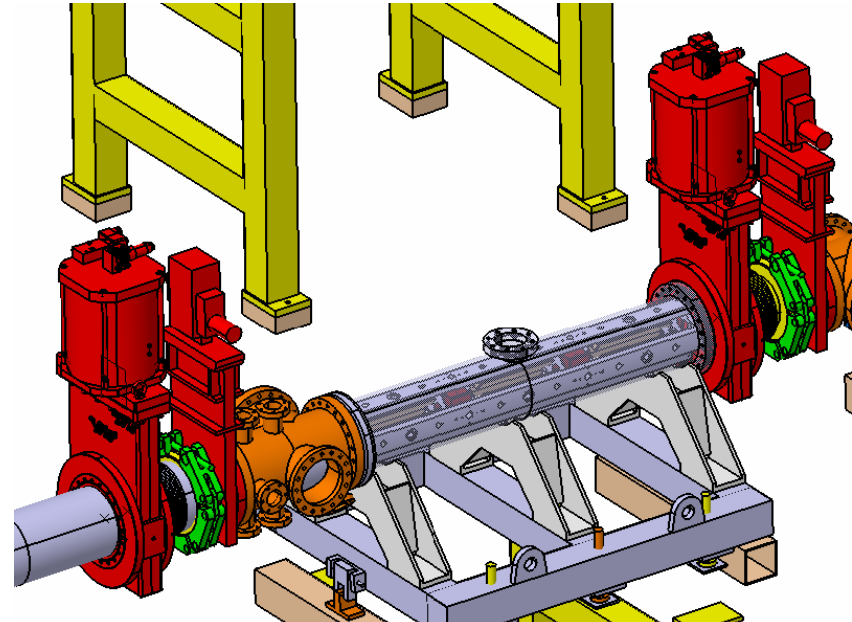


# Module 4: Dipole 2

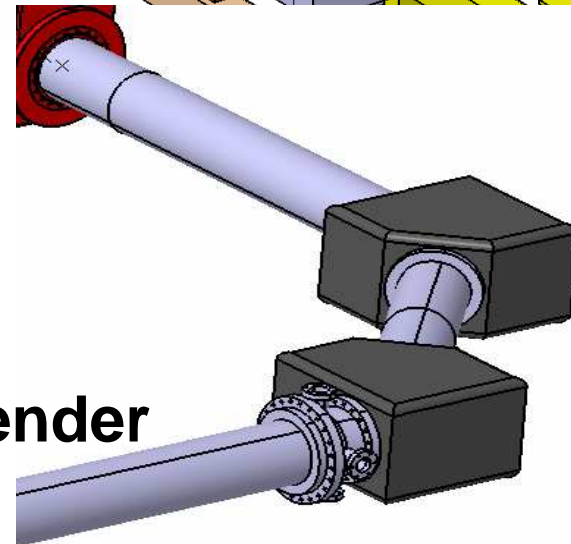
## Module 5: quad-quad and hex-quad



## Module 6: triplet

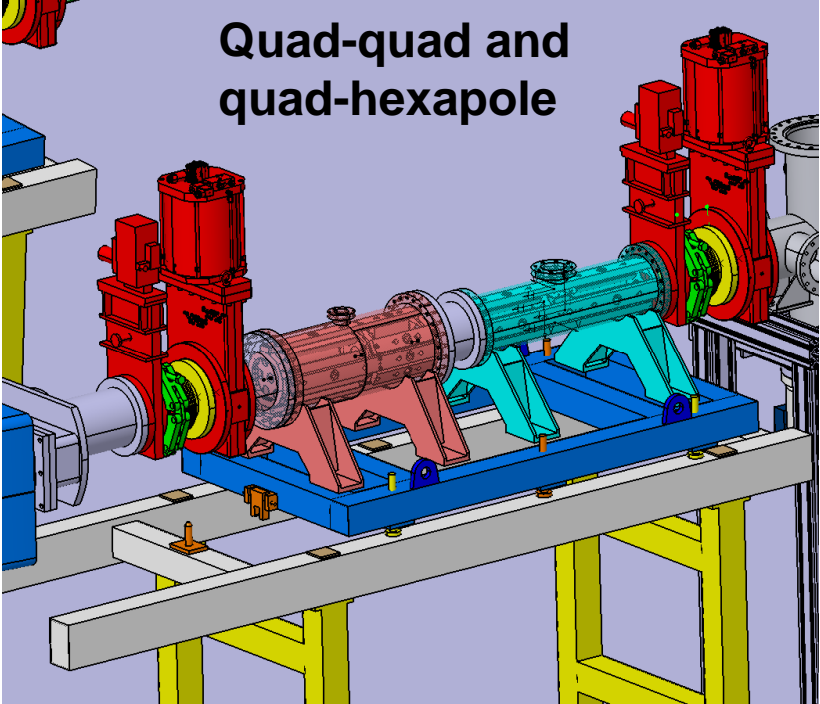
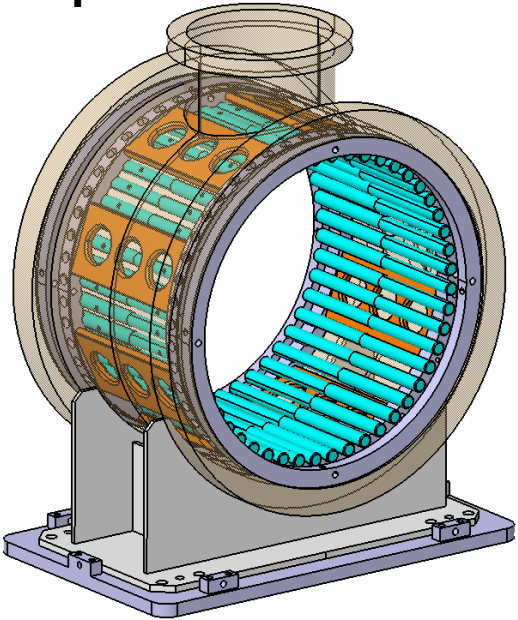


## Module 7: Electrical Bender

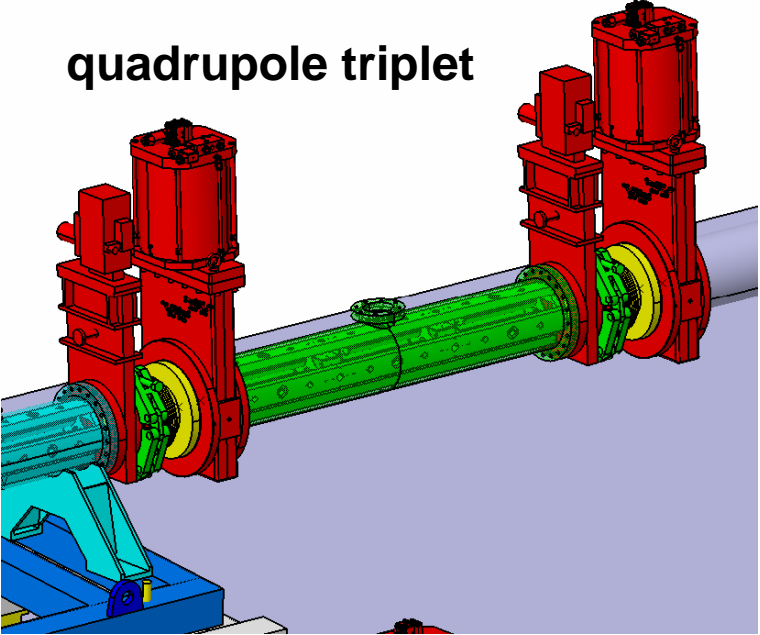


# HRS parts

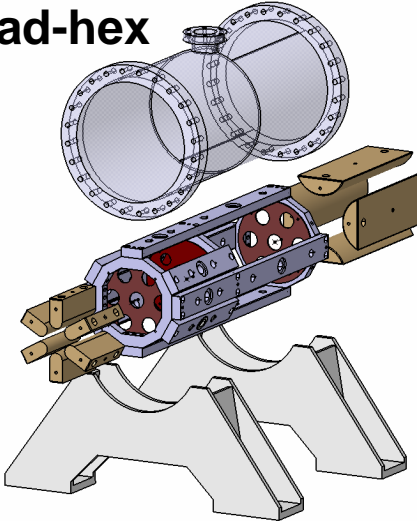
multipole



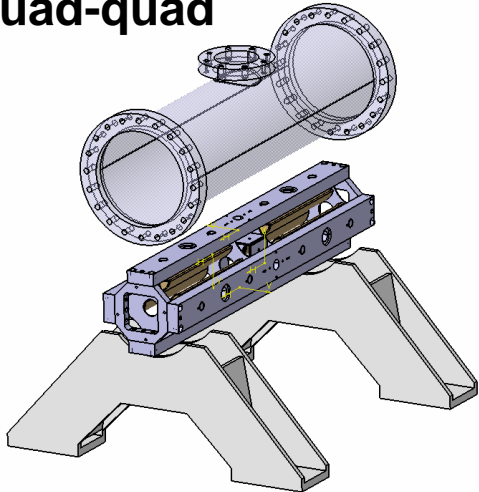
quadrupole triplet



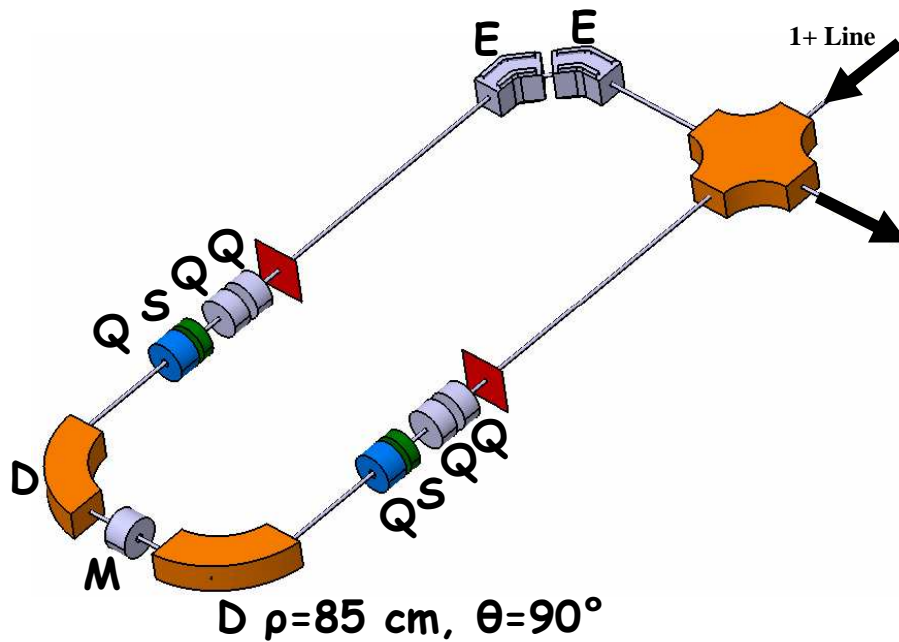
quad-hex



quad-quad



# HRS U180



Transfer matrix

	(x, )	(a, )	(y, )	(b, )
x	-1.0	-4.5	0.0	0.0
a	0.3E-7	-1.0	0.0	0.0
y	0.0	0.0	1.0	23.2
b	0.0	0.0	-0.2E-7	1.0
δm	-28.74	-52.66	0.0	0.0

✓  $(x|\delta) = -28.74 \text{ cm/\%}$

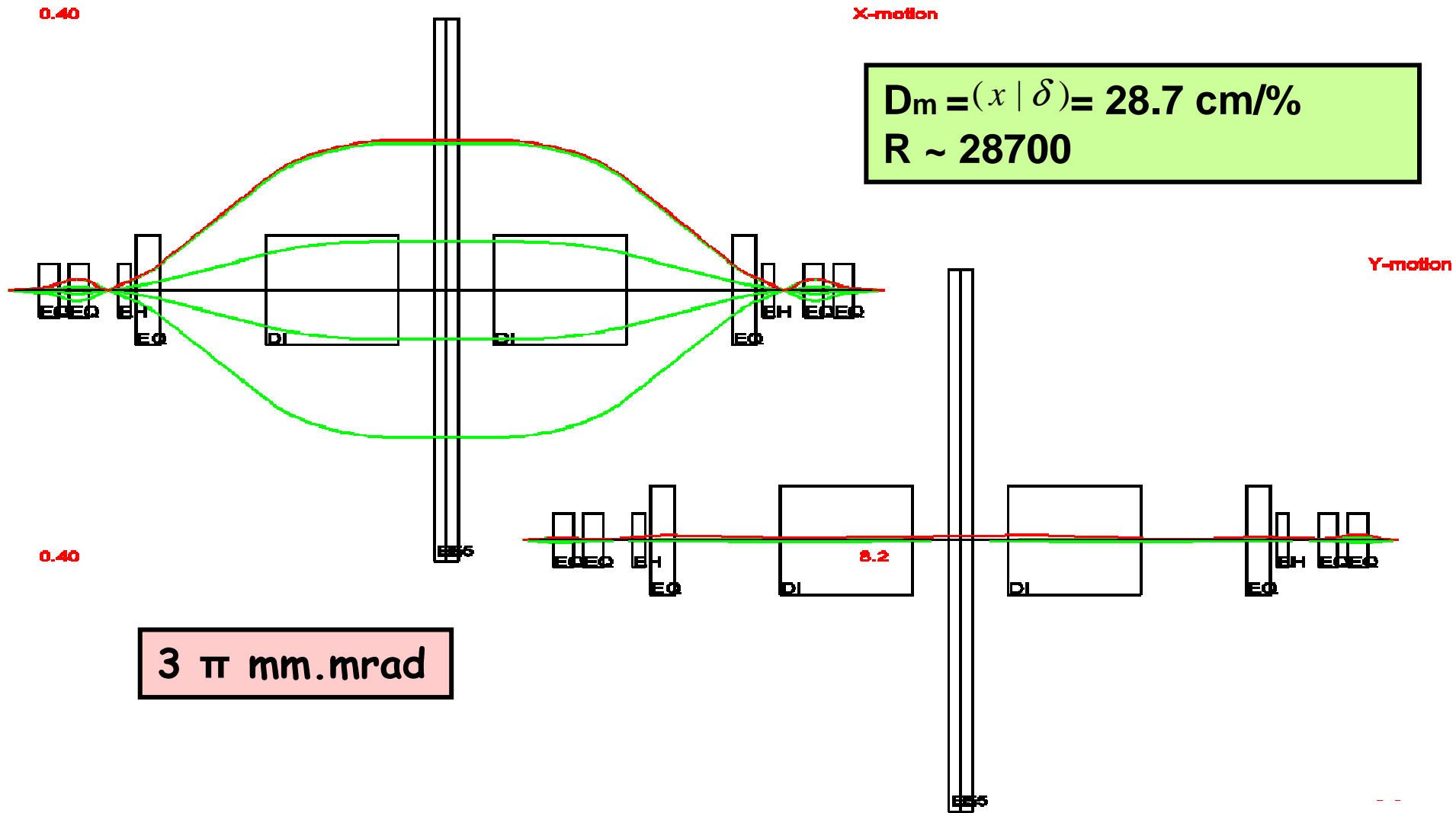
✓ Mirror symmetric

✓ point-to-point both x and y

$R_{\text{max}} \sim 28700$

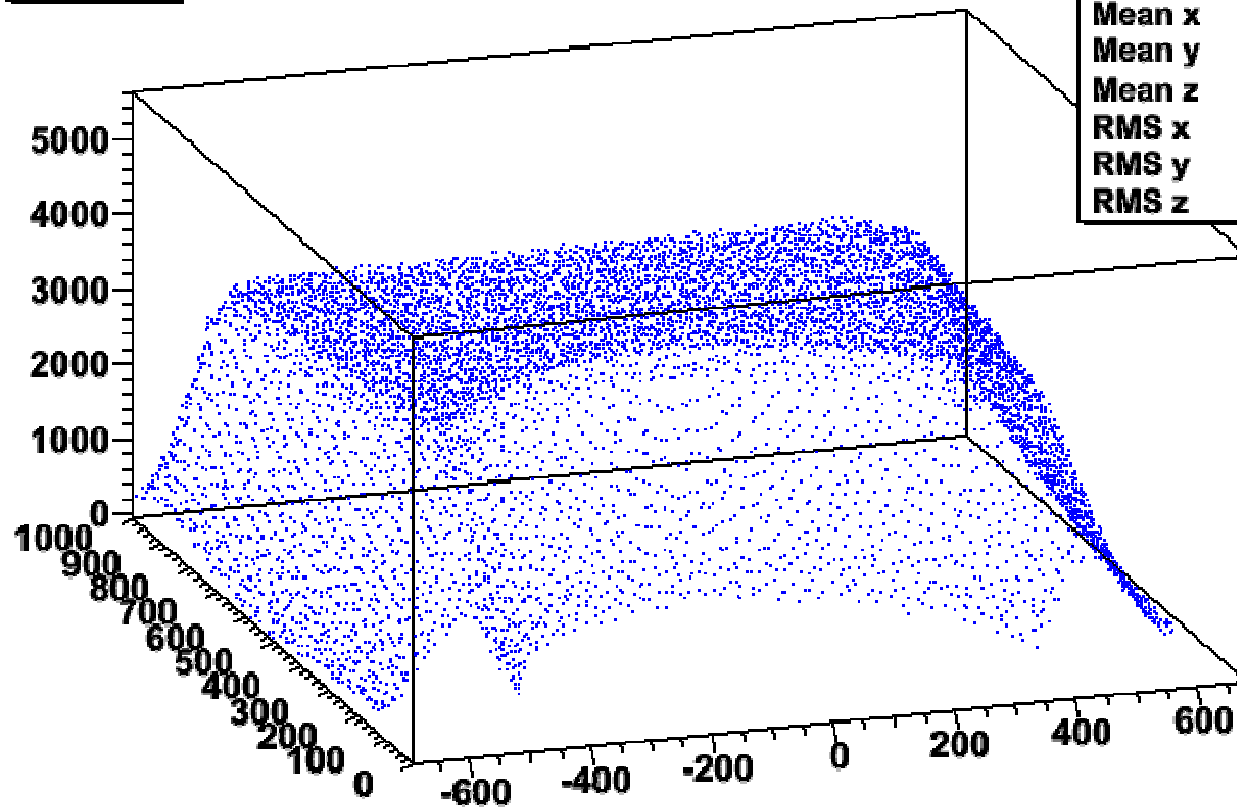


# COSY INFINITY X and Y motion



# TOSCA Field map for dipoles

**3-dim**



hxyz	
Entries	11890
Mean x	-3.73
Mean y	651.8
Mean z	2300
RMS x	419.4
RMS y	208.5
RMS z	987.5

**Maurice Duval  
GANIL**

# Status of the project

- ❖ **Global optical design finished**
- ❖ **Mechanical design and integration done presently (F. Delalee)**
  - ❖ **Integrate the 45° version if approved**
- ❖ **Preliminary magnetic design of dipoles (M. Duval, GANIL)**
- ❖ **For the end of the year: « cahier de charge » for dipole magnets**
- ❖ **Detailed drawings of all elements for end 2010**
- ❖ **Ordering of dipoles in 2011 → financing needed**
- ❖ **Manufacturing of other elements at CENBG**
- ❖ **Installation at CENBG during 2013**
- ❖ **Transfer to GANIL 2014**

**Backup slides**

# Cost Estimation

The Cost Estimation is shown in the following table:

concept	number	total cost (€)
Dipole	2	388.744,08
Long quadrupoles	4	278.121,03
Short quadrupoles	2	156.636,31
Sextupoles	2	100.533,15
Multipoles	1	66.481,58
Vacuum chambers	3	92.087,15
Vacuum system	1	130.200,00
Electrostatic correctors	1	56.875,00
Power sources	6	302.709,33
<b>TOTAL VAT EXCLUDED</b>		<b>1.572.387,63</b>

**Prices include conceptual design, manufacturing design and manufacturing. Turnkey**