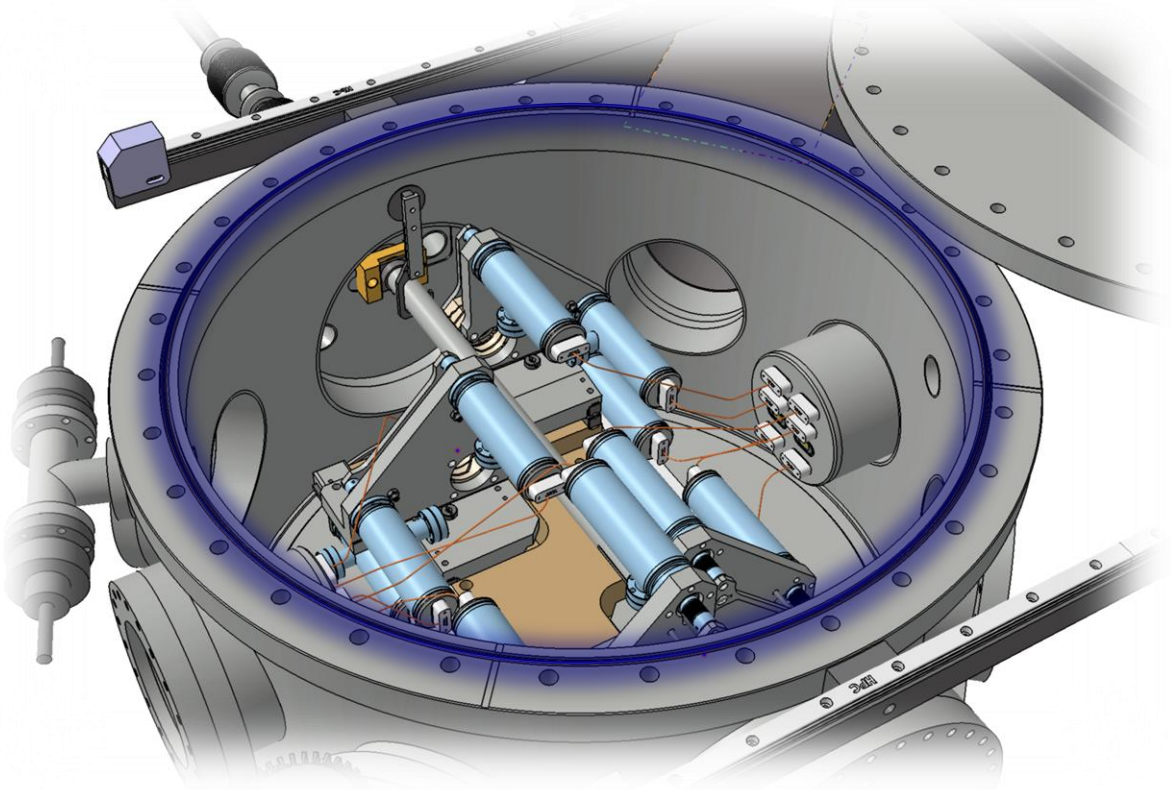
MightyLaser
4-mirror Compton Cavity



4-mirror cavity and vacuum chamber

CONTENT

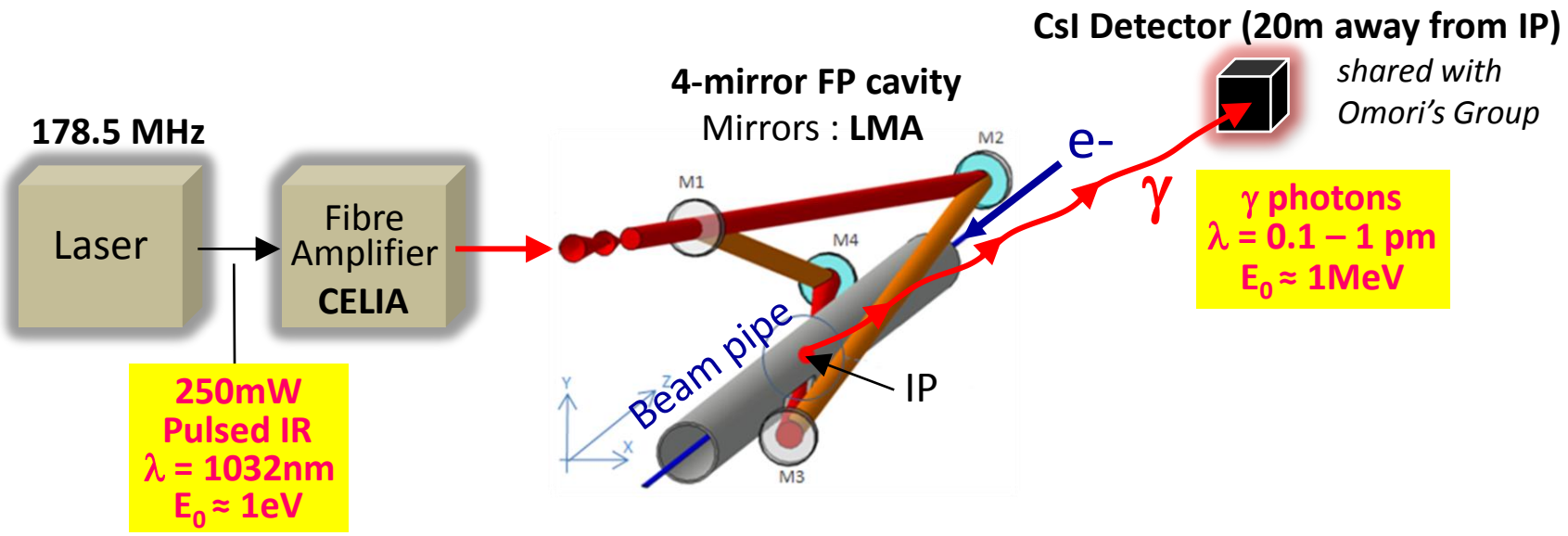
Questions jehanno@lal.in2p3.fr *skype* : didier.jehanno

MightyLaser is located in the **DR** (*straight section North, Laser Wire/Omori's 4M Compton Cav.*)

MightyLaser is an **Inverse Compton Scattering** experiment : **e- / photon collisions**

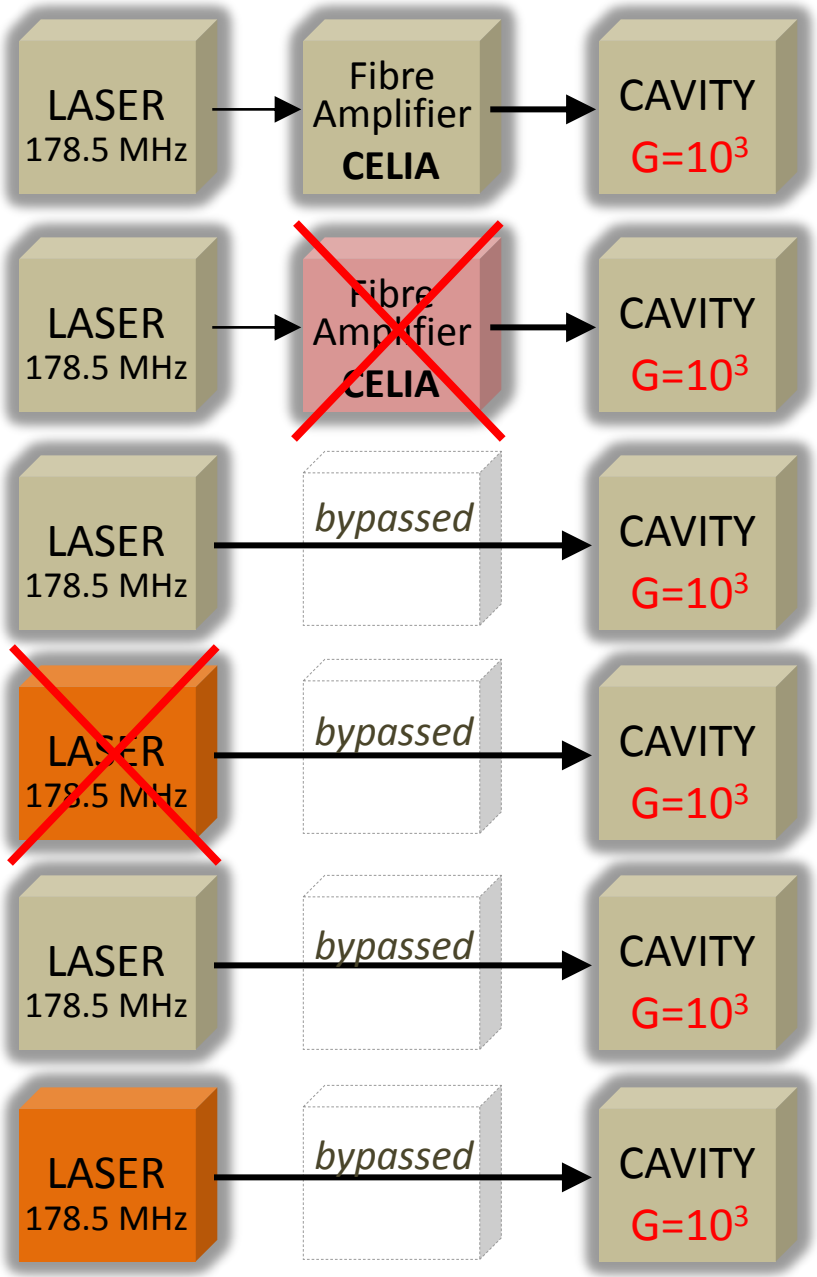
Low energy **IR photons** (*Laser*) **gain energy** from **DR electrons** and become **γ photons**.

IP is located inside a **Vacuum Chamber** containing a **4-mirror Fabry-Perot cavity** (*amplifier*)



	FA	CG	CO	FA.CG.CO	
	Fibre Amplifier	**Cavity Gain**	**Coupling**	**IP power**	**γ/bc**
Design	100W	10^4	100%	1 MW	$> 10^4$
Results	55W	10^3	60%	*1kW*	
published	<10W	10^3	20%	160W	2.7

MAIN EVENTS & STATUS



Installation : **summer 2010**
First Compton γ : **2010/10/25**
Published : **2.7±0.2 γ/bc**

2011/03/06 : Fibre broken
2011/03/11 : earthquake

→ **New design**

Best Reliability

2011/05/25 : beam recovered
2011/06/01 : beam in DR
2011/06/03 : beam in ATF2
2011/06/23 : MightyLaser restarted

2011/07/20 : Laser Failure

→ **Repair**

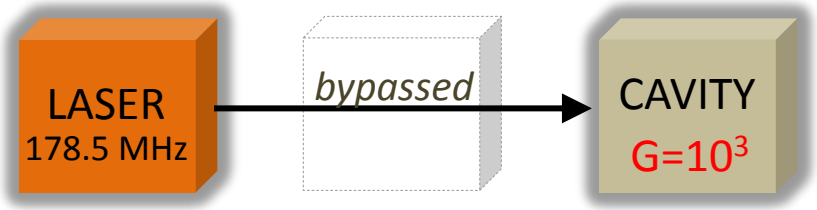
2011/10/04 : Setup restarted

2011/10/27 : Modelocking unstable (CW)

→ **New Laser**

New Manufacturer

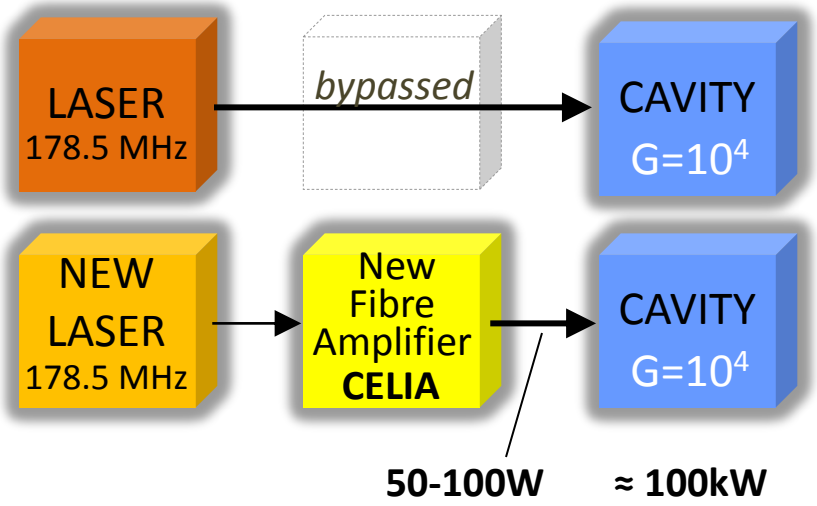
OUR BEST PLAN FOR 2012



Laser : not reliable for Compton runs
Fibre Amplifier : none
Cavity Gain : G=10^3

End of 2011

2012



1 week shutdown

2012/02/27 : Change mirrors (Cavity Gain=10^4)

3 weeks shutdown

2012/03/19 : Install new Fibre Amplifier
Install new Laser

Best case scenario

2012/04/09 : Compton γ *"ready"*

From 04/09 : We will take Compton data (parasitically) and we request **5 shifts**.

3 2012

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

4 2012

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

5 2012

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

6 2012

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30