

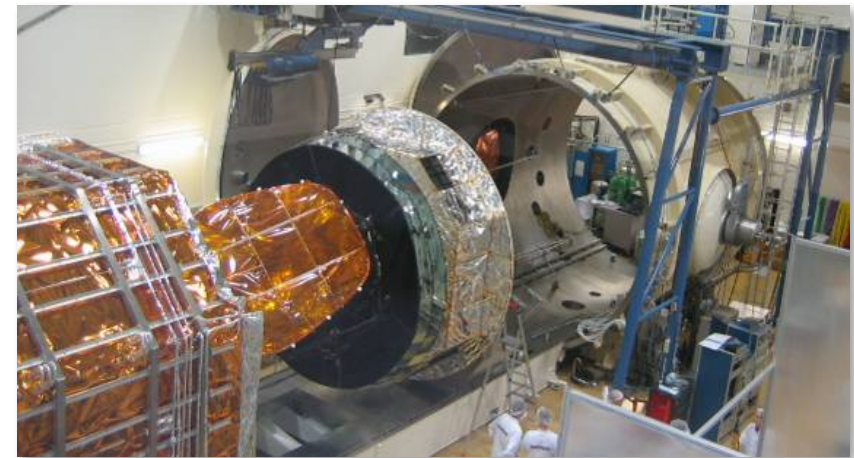
LUVOIR.be

Pierre Royer (KUL)

Etienne Renotte, Serge Habraken (CSL)

Paris, 11-12 Jan 2017

- **Research Centre of the University of Liege**
- **Active in space instruments engineering and testing since the 60's**
- **ESA-recognised test centre**
- **1,000 m² ISO5 & ISO7 clean-rooms**
- **Develops space science instruments or subsystems**
- **Payroll ca. 100**
- **More...**
<http://www.csl.ulg.ac.be/>





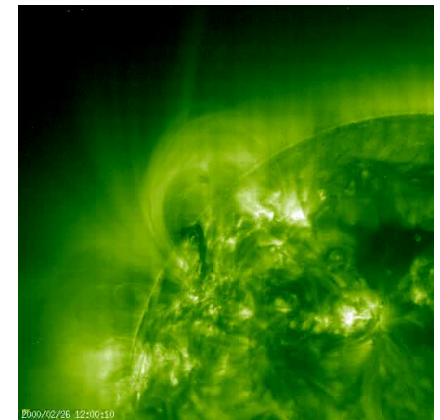
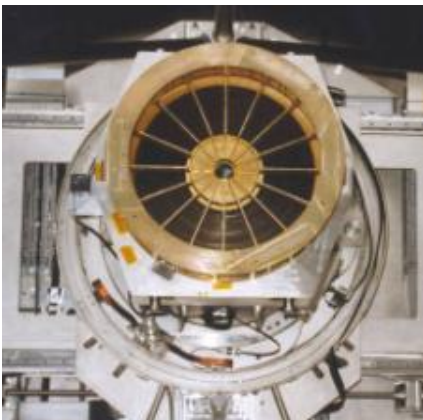
CSL Background in the Science Programme

Nom	Lanc.	C.U.	Test	Nom	Lanc.	C.U.	Test
<i>HST (NASA)</i>	1990	X	-	GAIA	2013	-	X
SOHO	1995	X	-	LISA-Pathfinder	2014	-	-
<i>CASSINI-H. (NASA)</i>	1997	-	-	<i>ASTRO-H (JAXA)</i>	2014	-	-
XMM	1999	X	X	BEPI-COLOMBO	2015	-	X
<i>IMAGE (NASA)</i>	2000	X	-	<i>MICROSCOPE (CNES)</i>	2016	-	-
CLUSTER	2000	-	-	SOL. ORBITER (M1)	2017	X	-
INTEGRAL	2002	X	-	CHEOPS (S1)	2017	X	X
MARS-EXPR.	2003	-	-	<i>JWST (NASA)</i>	2018	X	X
ROSETTA	2004	-	-	<i>Solar Probe+ (NASA)</i>	2018	X	-
VENUS-EXPR.	2005	-	-	EUCLID (M2)	2020	X	X
<i>Hinode (JAXA)</i>	2006	-	-	JUICE (L1)	2022	X	-
<i>COROT (CNES)</i>	2006	X	X	PLATO (M3)	2024	X	X
<i>STEREO (NASA)</i>	2006	X	-	ATHENA (L2)	202x	X	?
HERSCHEL	2009	X	X	Arago (M5)	---		
PLANCK	2009	-	X				
PROBA-2	2009	X	-	LISA (L3)		?	
<i>JUNO (NASA)</i>	2011	X	-	...			

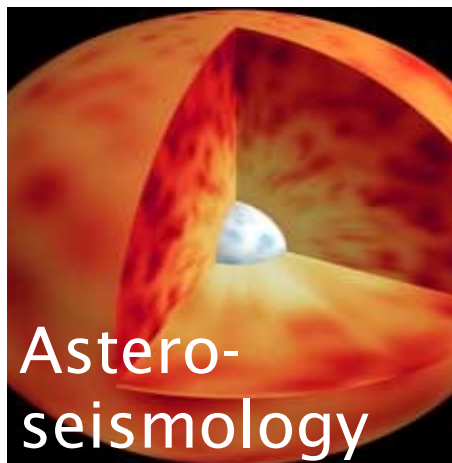


CSL Background in Vac UV Calibrations

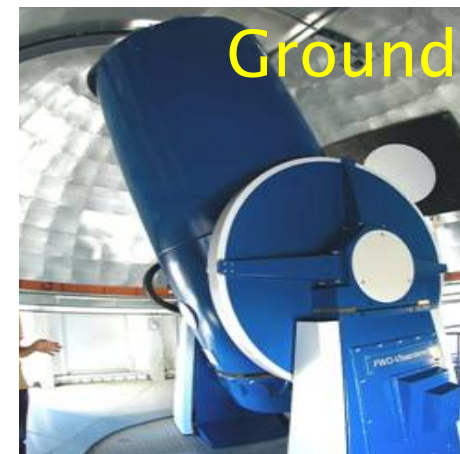
- **HST FOC & PDA calibrations (1975 – 85)**
- **SOHO EIT telescope (1990 – 95)**
- **XMM EUV calibration (1995 – 2000)**
- **IMAGE FUV-SI (1997 – 2000)**
- **PROBA-2 SWAP + LYRA (2004 – 2009)**
- **Solar Orbiter EUI**
- **ICON FUV**



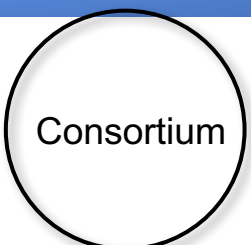
Research



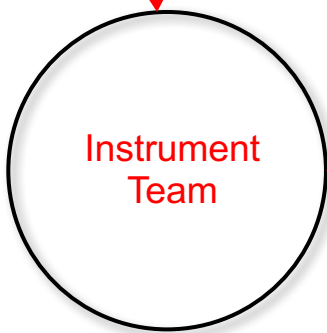
Instrumentation



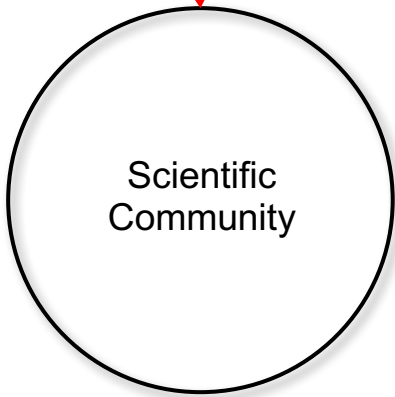
Engineers
(Industry)



Build it!



Interface



Use it!

Astrophysicists
(Universities)

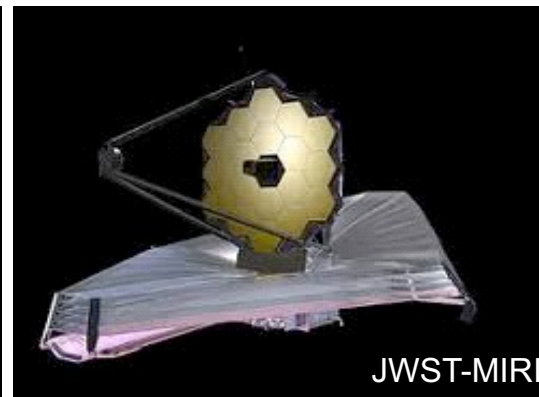
- Testing
 - Component, instr., IST, CoP, PV
 - QM, FM, FS
- EGSE, OGSE
- Characterisation
- Calibration
 - Concept, coding, exec., analysis
- Monitoring (health, trends, calib.)
- Def. of obs. modes
- Uplink logic, command & sched.
- Downlink telemetry decoding
- Data reduction software
- Community support
- ...



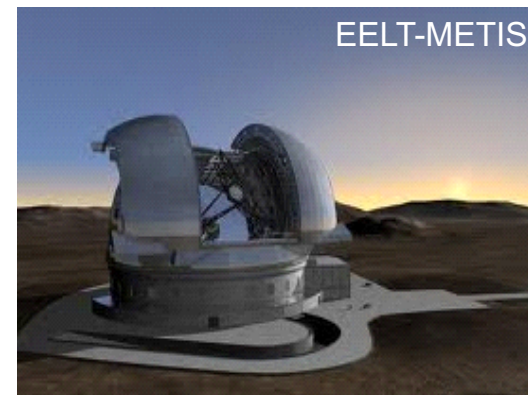
ISO-SWS



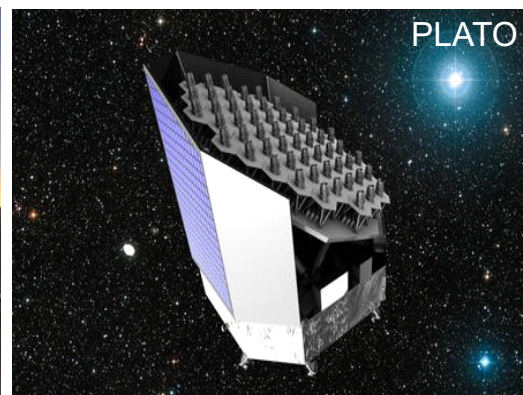
HERSCHEL-PACS



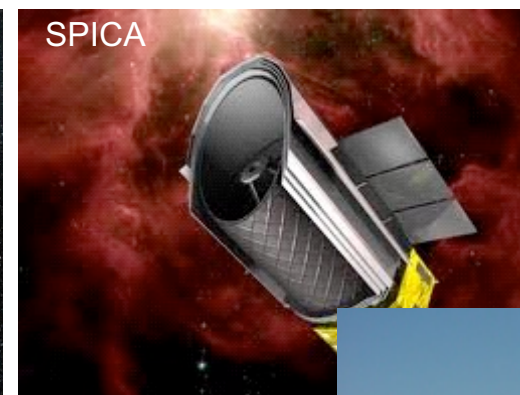
JWST-MIRI



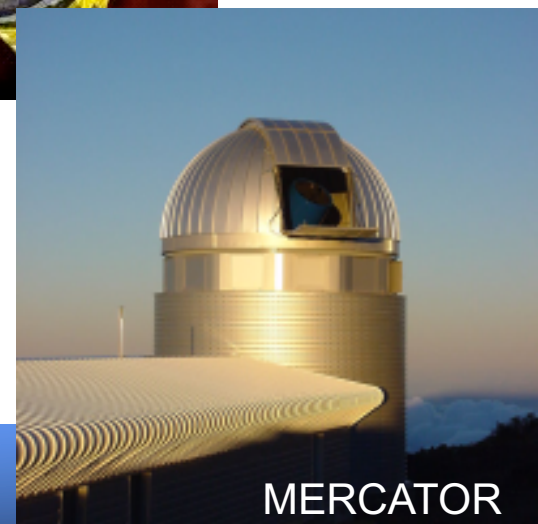
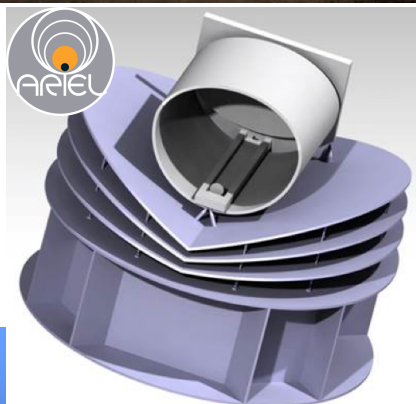
EELT-METIS



PLATO



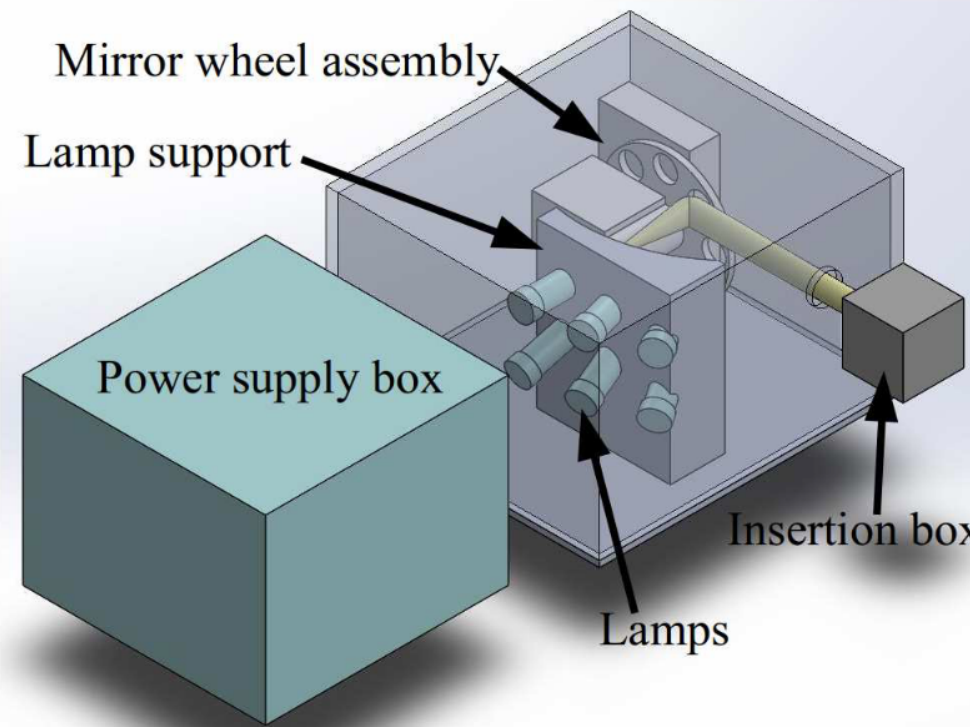
SPICA



MERCATOR

Belgium is in charge of the on-board calibration unit of Arago Partnership CSL (ULg), KUL

- CSL : design, development, MAI&T of the flight hardware
- KUL : ground-based characterisation of the Calibration Unit
EGSE, software and ground calibrations



Possible Belgian contribution to LUVOIR

- **Large scientific support**
- **Calibration Unit, building on Arago experience**
- **Taking adv. of CSL H/W expertise and/or test facilities**
- **Funding ...**

If all goes well, this instrument will need a name

- **AragoRN** **Arago Revisited for NASA**
- **FAUVOIR** **FAR-uv on I'UVOIR**
- **AURUVOIR** **Admirable, Utmost Resolution on I'UVOIR**
- **BART** **BART Ain't Really a Telescope**
- **T.R.U.M.P.** **Telescope to Revolutionise
(and Ultimately Manipulate)
Physics**