Switzerland booth
Supplier booklet

SPIE 2024 Astronomical Telescopes & Instrumentation

16th – 21st June 2024
Yokohama, Japan

Foreword

The SPIE ASTRONOMICAL TELESCOPES & INSTRUMENTATION conference is the world's leading technical conference in the field of astronomy telescopes and their related supplier network. For the last sixteen years, SPIE ASTRO has been organized every other year alternating between cities in the United States, Europe and Asia. The conference brings together scientists and engineers involved in the design and construction of the largest and most complex telescopes and their instrumentation.

The discovery of the first exoplanets in 1995 by Geneva University researchers or more recently in 2018 the release of the M87 supermassive blackhole images by the Event Horizon (EHT) Collaboration are just two examples of a long success story. They demonstrate the groundbreaking innovative potential of modern sky observation, and they also illustrate that basic astronomy research depends on cross-border cooperation with highly innovative companies for the development of tailored technologies.

Swiss companies and astronomy-related research institutions are making vital contributions to astronomy telescope and instrument activity, mostly in the frame of the ESO European Southern Observatory collaborations of which Switzerland has been a member since 1982. Collaborations are on going with other observatories, institutes and space agencies, such as ESA and NASA.

Thanks to the extensive university-industry R&D cooperation, Swiss firms are recognized internationally for their ability to deliver high value-added components in many technology fields used in modern astronomy systems. The Swiss industry provides a large and diversified technology portfolio to prime contractors of telescope systems and instruments, such as:

- Opto-mechanical assemblies with high-end coating solutions.
- Tip-tilt stability and anti-vibration flexure mechanisms.
- Fiber optics and micro-positioners on image plans.
- Laser trackers for mirror calibration and alignment
- Engineering and assembly of opto-electronic sub-systems.
- Time and frequency devices.
- Laser Frequency Combs and spectral calibration systems.

As trustworthy and efficient business partners, with an engineering-oriented project mindset and a high entrepreneurial motivation for prestige astronomy programs, Swiss companies are well known worldwide for their reliability and professionalism. On-time delivery, customer satisfaction and high service standards are integral to the Swiss industry culture.

We warmly invite you to visit our booth.
Please do not hesitate to contact us to learn more about your opportunities with Swiss companies.

On behalf of the Switzerland booth organization team,

Michel Hübner
Head of Swiss ILO Office

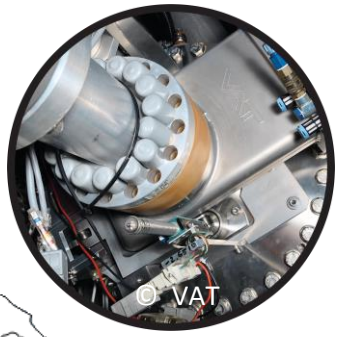
Elena Benedetto
Executive Officer NCCR PlanetS
Technology & Innovation Platform

Swiss High Tech Valley

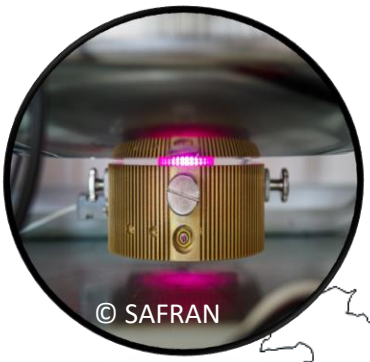
for telescope engineering

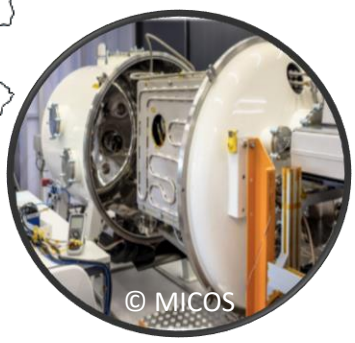
② Metrology & Photonics

③ Vacuum & Cryogenics



① Time & Frequency

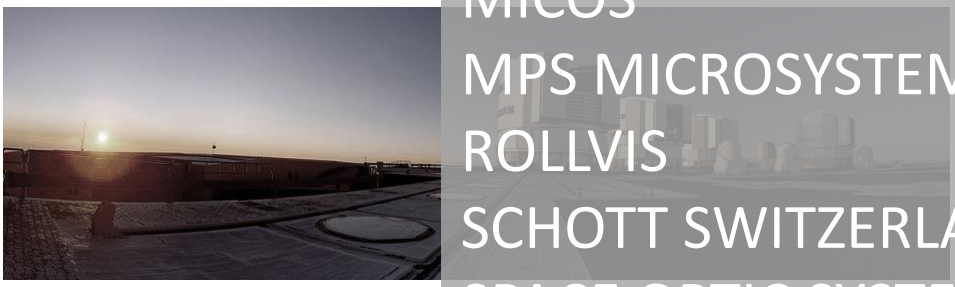




⑤ Detector Engineering

④ Precision mechanisms

Part 1: Industry exhibitors



ALMATECH
ATELERIS
BEYOND GRAVITY
LEICA GEOSYSTEMS
IOXOS
MAXON
CSEM
MICOS
MPS MICROSYSTEMS
ROLLVIS
SCHOTT SWITZERLAND
SPACE OPTIC SYSTEMS
SWISSOPTIC
T4SCIENCE SAFRAN
WZWOPTICAG
XRNANOTECH
VAT
ZURICH INSTRUMENTS

Almatech SA

Creative. Flexible. Reliable.

WEB SITE

www.almatech.ch

ACTIVITY KEYWORDS

Opto-mechanical subsystems, instrument structures, telescopes, radiators; calibration, pointing, scanning, flipping mechanisms

WHO WE ARE

Almatech brings unprecedented complex engineering challenges all the way to the delivery of value-added solutions to its clients in the fields of mechatronics, lightweight structures, and thermal systems.

Inventor of the Large Angle Flexible Pivot, Almatech offers disruptive solutions such as: contactless rotary joint actuators, hemispherical stabilized pointing systems, camera stabilization systems, multi-mode scanners, resonant scanners... for space and terrestrial application.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Pointing System	Combining micro-radian class optical pointing stability with high level micro-vibration isolation, hemispherical coverage and no need of fine steering mirror.	
Scan mechanism	Innovative multi-mode scanner solution based on a single compliant system with up to +/-80° scan angle for combined calibration(s) and scan with infinite life capacity.	
Stabilization system	Innovative design of camera stabilization system integrating both active and passive vibration suppression using novel contactless flexible joint actuators on 3-axis.	

almatech

Fabrice Rottmeier

Technical & Commercial Director

fabrice.rottmeier@almatech.ch

+41 (0)21 555 3002

EPFL – Innovation Park, Bâtiment D
1015 LAUSANNE
SWITZERLAND

KEY FIGURES

Foundation: 2009

Employees: 30

SOME REFERENCES

- CHEOPS Space telescope CFRP structure
- SPICE Slit Change Mechanism
- CO2M Cryogenic Radiator & Sunshield

Ateleris GmbH

Comprehensive Software Engineering

WEB SITE www.ateleris.com

ACTIVITY KEYWORDS

Scientific & High-Performance Computing, Machine Learning & Data Science, System & Software Design, Hardware/Software Co-Design

WHO WE ARE

Ateleris GmbH is a Swiss software and technology engineering company that provides comprehensive engineering and consulting services across a broad technology spectrum to clients from various industries, space, science, and research.

We support our clients throughout the entire project lifecycle, from conceptualizing use cases and requirements engineering, development, implementation, integration, and V&V to operationalizing services with monitoring and maintenance.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
System & Software Design Services	Comprehensive software engineering, co-design, and consulting services over the entire project life-cycle.	N/A
HPC and Cloud Computing Services	Design, implementation, and operation of data pipelines and distributed computing solutions.	N/A
Model-Based Systems Engineering with ASN.1	ASN1SCC generates ESA PUS-C telemetry and telecommand packets for multiple platforms (C/C++, Ada, Scala, and soon Python).	N/A

ATELERIS

Mr. Laszlo ETESI

CEO

laszlo.etesi@ateleris.ch

+41 79 661 77 00

Ateleris GmbH
Neumarkt 1, 7th Floor
CH-5200 Brugg

KEY FIGURES

Foundation: 2016

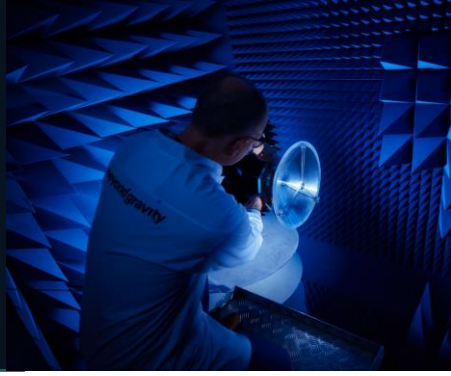
Employees: 15

SOME REFERENCES

- Application Software for the STIX instrument onboard ESA Solar Obiter (ESA).
- Generating formally verified communication protocols with ASN1SCC (ESA).
- Building end-to-end quantum-safe satellite links (ESA, ARTES 4S).
- Hardware-accelerated object detection for embedded systems (armasuisse).

Beyond Gravity

We help humanity explore the world and beyond.



WEB SITE www.beyondgravity.com

ACTIVITY KEYWORDS

Satellites, Launchers, Lithography, Optical Instruments, High Precision Mechanisms

WHO WE ARE

Headquartered in Zurich, Switzerland, Beyond Gravity is not a typical space company. We're a unique blend of agility, speed, and innovation, fusing a start-up mindset with decades of industry expertise and a track record of 100% mission success. Our dynamic team of over 1800 professionals, spread across 14 locations in seven countries, is dedicated to pushing the boundaries of what is technically feasible. We're not just building crucial products for the satellites, launchers and semiconductor industry, we're helping to improve life on earth.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Satellites	Anything you need on a satellite: Electronic and Mechanical Solutions, Thermal Control Solutions, Ground Support, Data Solutions	N/A
Launchers	Launcher Structures, Separation Systems, Sounding Rockets, Testing Services	N/A
Lithography	Complex, demanding and tailor-made optical instruments and mechanisms for the most demanding applications	N/A

beyond gravity

KEY FIGURES

Foundation: 1960s (as Contraves)

Employees: 1800

SOME REFERENCES

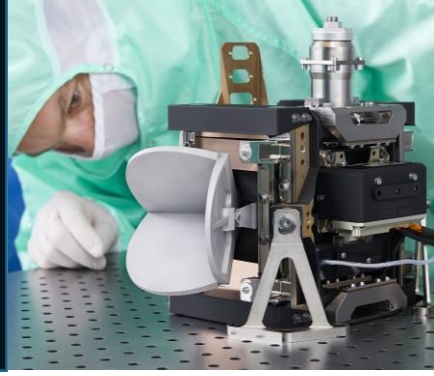
- ESA: Planck, LISA, Euclid, HERA, and countless other missions.
- NASA: Orion Spacecraft, JWST
- Northrop Grumman: Solar Array Drives
- ULA: Structural Parts for Rockets
- Amazon: Dispenser for Satellites

Stefan WISMER
Sales Manager
stefan.wismer@beyondgravity.com
+41 44 798 98 97

Beyond Gravity Schweiz AG
The Circle 23
8058 Zürich-Airport – Switzerland

CSEM

Advanced laser sources and opto-mechanics for space applications



WEB SITE

www.csem.ch

ACTIVITY KEYWORDS

Laser Frequency Combs, Stabilized Lasers, Astrocombs, Calibration Source, High Precision Space Mechanisms

WHO WE ARE

CSEM is an established Research and Technology Organization (RTO) that advances laser sources, laser metrology, and optical-mechanical assemblies for astrophysics instruments.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Astrocomb	Ultra-stable frequency combs to calibrate large telescopes	NA
Opto-mechanical assemblies	Highly stable mechanisms in space environment	NA
Laser metrology	Metrology of the LISA mission laser heads	NA

csem
FACING THE CHALLENGES OF OUR TIME

Steve Lecomte

BU Leader, Scientific Instrumentation

steve.lecomte@csem.ch

+41 32 7205959

Rue Jaquet-Droz 1
2002 Neuchâtel
Switzerland

KEY FIGURES

Foundation: 1984

Employees: 600

SOME REFERENCES

- ESO: New generation of astrocombs
- ESA: High performance atomic clocks
- LISA: Mission lasers metrology
- Carnegie Institute: MIRMOS Reconfigurable slit-mask mechanism

IOxOS Technologies SA

State of the art technology at the service of Big Science & Industry

WEB SITE

www.ioxos.ch

ACTIVITY KEYWORDS

FPGA centric COTS, VME, MTCA, Compact PCI Serial, Real Time Control and Diagnostic systems, PCI Express to VME bridge, deterministic Ethernet (AFDX)

WHO WE ARE

IOxOS Technologies is a Swiss company with the following areas of expertise:

- FPGA centric COTS based on open standards (VITA, PICMG) for real time control and diagnostic systems
- Original Equipment Manufacturer (OEM) of bridge solutions between PCI Express and VME
- Deterministic Ethernet (AFDX) for safety-critical airborne applications

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
MTCA.4 - Single Board Computers	Zynq UltraScale+ based Single Board Computer in MTCA.4 form factor for real time control and diagnostic systems	IFC_1414
MTCA.4 - FMC/FMC+ Carriers	Dual FMC/FMC+ carrier in MTCA.4 form factor featuring a Xilinx Kintex UltraScale FPGA for industrial control systems	IFC_1412
VME - Single Board Computers	COM Express type 6 based Single Board Computer in VME64x form factor featuring latest Intel Core i3/i5/i7 and Xeon processors for industrial control	VCC_1204

IOxOS TECHNOLOGIES
RELIABILITY BY DESIGN

Iván García

CEO

ivan.garcia@ioxos.ch

+41 (0)22 364 76 92

4 chemin des Fontenailles
CH-1196 Gland
Switzerland

KEY FIGURES

Foundation: 2007

Employees: 10

SOME REFERENCES

- ESO
- CERN
- ESS ERIC
- CEA Saclay
- Airbus

Hexagon – Leica Geosystems AG

Empowering a sustainable and autonomous future

WEB SITE

https://www.hexagonmi.com/

ACTIVITY KEYWORDS

Solutions from Design and Engineering to Production, Metrology and Inspection

WHO WE ARE

With nearly 4,000 employees in R&D and more than 3,700 active patents our technologies have an undisputed worldwide leadership for metrology and inspection systems.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Lasertrackerss	Highly portable precise optical large Volume inspection systems	Leica- Geosystems
CMM	PMM-G	Leitz

HEXAGON

Leica Geosystems

KEY FIGURES

Foundation: 1921

Employees: 21’000

SOME REFERENCES

- ESO
- ELT
- Airbus
- Boeing
- VW
- GE
- CERN
- ITER

Nik Suter

Sales Manager Lasertracker

Niklaus.suter@hexagon.com

+41 794151814

Mönchmattweg 5
5035 Unterentfelden

Maxon AG

High precision electric drives systems

WEB SITE

www.maxongroup.com

ACTIVITY KEYWORDS

High-quality micromotors, gearheads, sensors, controllers, mechatronic drive systems.

WHO WE ARE

By combining brushed and brushless DC motors, gearheads, sensors, and controllers, we create highly precise mechatronic drive systems. As a high-tech company, we are active worldwide in the fields of medical technology, aerospace, robotics, mobility solutions, and automated industrial applications.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Electric drives	DC and BLDC motors, gearheads, screw drives, encoders	
Electric controllers	Servo controllers, positionning control, motion controllers	
Ceramic parts	CIM process, compression molding and additive manufacturing	

maxon

Olivier CHAPPUIS

Innovation Lab Manager

olivier.chappuis@maxongroup.com

+41 41 662 95 93

Brünigstrasse 220
6072 Sachseln, Switzerland

KEY FIGURES

Foundation: 1961

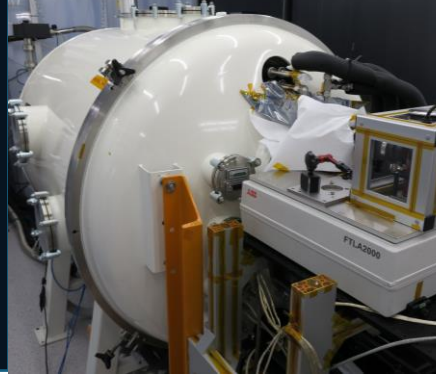
Employees: 3400

SOME REFERENCES

- ESA
- NASA
- Commercial space projects

Micos Engineering GmbH

Optical Systems for Space and Industry



WEB SITE www.micos.ch

ACTIVITY KEYWORDS

Performance engineering; mechanical, thermal and optical design; assembly, integration and testing for optical measurement systems.

WHO WE ARE

Micos Engineering GmbH is an independent engineering company for optical instrumentation based on its product know-how for scientific and commercial space-borne missions.

Products include spectrometers components (e.g. for IR interferometers), telescopes, blackbodies and calibration systems, ground support equipment, data processing and analysis based on our technology expertise. Our multi-disciplinary team performs joint space projects within professional networks with industrial and institutional partners.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Performance Engineering	Instrument requirement budgets, analysis tools/performance models (e.g. detection chain, reference system), L0 to L1c simulator, etc.	NA
Measurement and Calibration Systems	Flight blackbodies, radiometric and spectral in-flight calibration systems, components for spectrometers (e.g. prisms, telescopes)	NA
Ground Support Equipment	5-axis robotic calibration systems incl. HID controls; collimation, calibration and alignment systems for flight instruments	NA

Roman Schönbächler

Managing Director

roman.schoenbaechler@micos.ch

+41 44 533 80 02

Überlandstrasse 129
8600 Dübendorf
Switzerland

KEY FIGURES

Foundation: 2010

Employees: 17

SOME REFERENCES

- FORUM – ESA's thermal radiation mission (performance engineering)
- MTG – ESA's/EUMETSAT's weather monitoring mission (blackbodies)
- Sentinel-5 – ESA's mission to monitor the composition of the atmosphere (in-flight calibration subsystem)

MPS Micro Precision Systems AG

Experts in custom-made microsystems

WEB SITE

www.mpsag.com

ACTIVITY KEYWORDS

Miniature optomechanical systems, micro positioning, linear actuators

WHO WE ARE

MPS has a range of miniaturized, high-precision positioning technologies on which it develops and manufactures systems to customer specifications.

Particularly in the field of telescope instrumentation, MPS offers theta-phi fiber positioner solutions based on proven and reliable technologies.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Theta-Phi positioners	Theta Phi positioners going from a diameter of 6.2mm to 25mm and above.	MPS
Linear actuators	Miniature linear and dynamic lens actuators	MPS
Nano positioners	Nano-positioners with an incremental motion of 50nm	MPS

Greg Bagnoud

Senior VP Business Development

Gregoire.Bagnoud@mpsag.com

+41 32 344 44 72

Chemin du Long-Champ 95
2504 Biel-Bienne
Switzerland

KEY FIGURES

Foundation: 2003

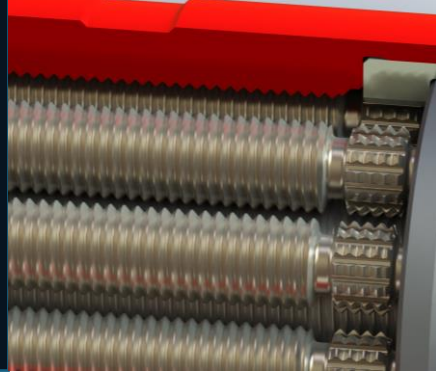
Employees: 500

SOME REFERENCES

- MOONS
- VLT
- SDSS-V
- ESO

Rollvis SA

Roller screws manufacturer



WEB SITE www.rollvis.com

ACTIVITY KEYWORDS

Roller screws – Extra long life, accuracy down to 6um , compactness, no backlash, high peak load , high speed , acceleration & deceleration

WHO WE ARE

Rollvis SA designs and manufactures high precision roller screws since 1970. We support customers across the globe in the high demanding sector such as aerospace, defense, space, automotive, medical and O&G .

Our ongoing commitment of R&D dept allows us to remain at the forefront of technology, with on going innovation and customization of our products to meet unique needs of each customer

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Planetary Roller Screws (RV)	Involve heavier loads and higher forces, or better speed	
Inverted Roller Screws (RVI)	Compact solution for short stroke, easily removable and assembly nut/shaft	
Recirculating Roller Screws (RVR)	Where resolution and positioning accuracy are utmost important	

ROLLVIS SWISS

Marcus Lee

Sales Manager

lee@rollvis.com

Tel: +1-832 302 0951

Rollvis SA
136, ch. du Pont-du-Centenaire | 1228 Plan-Les-Ouates | Genève - Switzerland

KEY FIGURES

Foundation: 1970

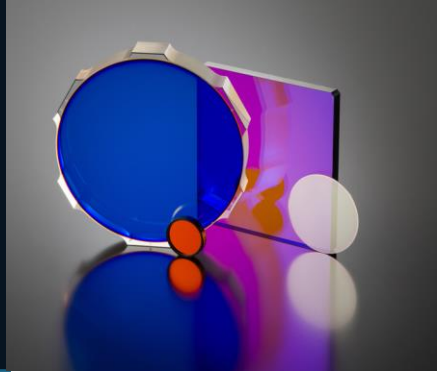
Employees: 70

SOME REFERENCES

- CERN
- ESO
- NASA

SCHOTT Suisse SA

State-of-the-art Optical component manufacture and coatings



WEB SITE

www.schott.com

ACTIVITY KEYWORDS

Aspherical lenses, Coatings, Astronomy filters, CNC-Precision machining, Prisms, Optical wafers, Gyroscopes, Optical glass, Filter glass, Sapphire, IR materials, ZERODUR® components.

WHO WE ARE

SCHOTT Advanced Optics is a valuable partner for developing products and customized solutions for applications in optics, astronomy and space, optoelectronics, augmented reality, life sciences.

With a portfolio of over 120 glasses, we master the value chain, from glass to finished and coated component. SCHOTT Suisse SA is the center of excellence for coatings and high-precision components within the value chain.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Coatings	Magnetron sputtering, Ion beam splitter, PVD, ITO coatings, Metallic coatings.	NA
Precision processing	CNC machining, Aspherical machining & Flat polishing	NA
Optical component manufacture	All processing steps from raw material to finished coated component	NA

SCHOTT
glass made of ideas

Juan José Sanchez Garcia

Sales Manager Astro & Space

juan-jose.sanchez@schott.com

+41 (0)244 23 58 19

Rue Galilée 2
1401 Yverdon-les-Bains
Switzerland

KEY FIGURES

Foundation: 1968

Employees: 230

SOME REFERENCES

- ESO
- ITER-F4E

Safran Electronics & Defense

World Leader in Atomic Clocks Solutions

WEB SITE www.safran-navigation-timing.com

ACTIVITY KEYWORDS

MASER, Frequency Reference, Metrology, State-of-the-art, Scientific Labs, Atomic Clocks, Timing, high-performance, frequency stability, space applications, VLBI, robust solution

WHO WE ARE

Safran Timing Technologies, a Safran Electronics & Defense subsidiary, is a world leader in rubidium atomic clocks and oscillators, Hydrogen MASER, integrated in Global Positioning Navigation System both on board satellites, as well as for ground stations. Safran Timing Technologies manufactures a large portfolio of atomic clocks, starting from miniaturized Rb oscillators (low SWAP) to active hydrogen MASERs with the best frequency stability. Safran Timing Technologies addresses several markets with numerous uses-cases, with an organization based on 3 product lines: Industry & Defense (IND&DEF), Space and Science & Metrology (SCI&MET).

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Active Hydrogen MASER Clock	The iMaser 3000 clock is a state-of-the-art, high-performance and robust maser, integrating intelligent functionality in a compact and cost-effective package. It utilizes the latest maser technologies and active/sleep mode of operations for extended lifetime.	SAFRAN

SAFRAN

Gilles CIBIEL

Product Manager – Science Metrology

gilles.cibiel@nav-timing.safrangroup.com

+41 76 615 93 67

Rue du Vauseyon 29,
2000 Neuchâtel
Switzerland

KEY FIGURES

Foundation: 2006

Employees: 140

SOME REFERENCES

- ESA
- SKAO
- NRAO
- BKG
- MPI
- MIT

Space Optics Systems

Makes you see further

WEB SITE www.spaceopticsystems.com

ACTIVITY KEYWORDS

Optomechanical Design – FEM – Mechanical Design – Calibrations – Electrical Design - Testing for Space & Astronomy industry.

WHO WE ARE

Space Optics Systems is a Swiss company offering its engineering services through a team of experts with very high technical skills.

We propose various engineering profiles who have a strong experience in space and astronomy industry and have many projects in their background.

SOS is also providing a Light Distribution System for merging, splitting or guiding light typically used inside Calibration Units for telescopes.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Service	E-ELT ANDES : Light Distribution Point design	University of Bern
Service	CHEOPS : Calibration and Alignment unit	University of Bern
Service	Ariane 6 : Ground Instrument for fiber integrity testing	ID Quantique

SPACE OPTICS SYSTEMS

Mirsad SARAJLIC

CEO

info@spaceopticsystems.com

+41 79 487 44 45

Space Optics Systems Sàrl
Chemin du Vieux-Moulin 25c
1373 Chavornay, Switzerland

KEY FIGURES

Foundation: 2013

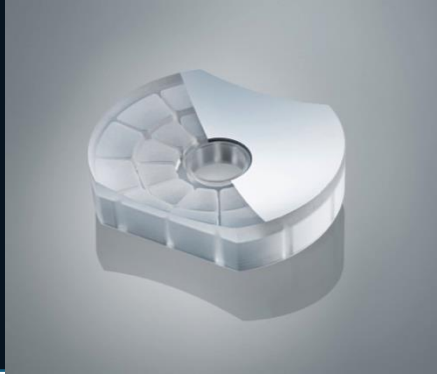
Employees: -

SOME REFERENCES

- CHEOPS
- ESO- ANDES
- ESO - NIRPS

SwissOptic AG

Convincing Solutions for Your Ideas



WEB SITE

www.swissoptic.com

ACTIVITY KEYWORDS

Opto-Mechatronical Assemblies, Objectives, Telescopes, Mirrors, Lenses, Prisms, Coatings

WHO WE ARE

SwissOptic AG designs and manufactures high-end optics for demanding applications in the photonics industry, with the highest precision.

We design and manufacture a wide range of precision optical components, assemblies and systems. We are your competent partner along the entire value chain, from concept to series production. Our knowledge and many years of experience in a wide range of applications for optical systems enable us to solve your specific challenges with a custom-made design.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Opto-Mechanical Assemblies	Manufacturing, assembly and Integration of custom made opto-mecatronical assemblies with electronical components	NA
Light-Weight Mirrors	Light-weight mirrors with aspherical, spherical and free forms made of optical glasses and ceramics	NA
Coating	Custom made optical coatings, developed, designed and qualified fully in-house.	NA

SWISSOPTIC
A member of the JENOPTIK Group

Markus Liedke

Sales Engineer

markus.liedke@SwissOptic.com

+41 71 747 06 81

Heinrich-Wild-Strasse 209
9435 Heerbrugg
Switzerland

KEY FIGURES

Foundation: 1997

Employees: 450

SOME REFERENCES

- ESA

VAT Group AG

World leading supplier of high performance vacuum valves and vacuum systems.

WEB SITE

www.vatvalve.com

ACTIVITY KEYWORDS

Vacuum Valves, Modules, Global Services, Bellows, Design , Motion Components , Sealing Technology , Vacuum Technology , Concept to product und Engineering

WHO WE ARE

We change the world with vacuum solutions – that is our purpose as the world's leading supplier of high-end vacuum valves. The Group reports in two segments: Valves and Global Service. The Valves segment is a global developer, manufacturer and supplier of vacuum valves for the semiconductor, displays, photovoltaics and vacuum coating industries as well as for the industrial and research sector. Global Service provides local expert support to customers and offers genuine spare parts, repairs and upgrades.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Vacuum All-Metal Valves	repeatable "hard-on-hard" metal sealing, very high bakeout temperatures possible, radiation resistance, no elastomer in process-contacting areas	VAT
Vacuum Elastomer Valves	high-performance components for vacuum-assisted processes with special requirements on precision, durability and ultra-clean vacuum	VAT
Valve Modules and individual solutions	integrated solutions from a single source	VAT

PASSION. PRECISION. PURITY.

Takabayashi Masashi

ADV sales manager, VAT Japan

JP@vatvalve.com

03-6629-2120

VAT Ltd.
1F MFIP Haneda
10-11 Hanedaasahicho Ota-ku
144-0042, Tokyo

KEY FIGURES

Foundation: 1965

Employees: 2.700

SOME REFERENCES

- SPring-8
- CERN
- DESY
- IHEP
- ITER
- LIGO
- NASA
- PSI

WZWOPTIC AG

Swiss Precision Optics

WEB SITE

www.wzw.ch

ACTIVITY KEYWORDS

High precision flat optics, Opto- & optomechanical assemblies, Laser optics, Superpolishing, Coatings, Prisms, Beamsplitter, OEM products, Mirrors

WHO WE ARE

WZWOPTICAG is manufacturer of High Precision flat optics in a big dimensions range. Our long experience in optics and a fully equipped machine shop allows us to manufacture all kind of flat optics from the raw material to the final product in house. In our ISO5 cleanrooms we are able to do opto- und optomechanical assemblies on the highest quality standard.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Superpolishing	Roughness below 1 Ångström RMS	N/A
Coating	Custom made optical coatings, developed, designed and qualified fully in-house	N/A
Assemblies	From concept and development to a finished product – we have everything you need under one roof	N/A

WZWOPTICAG
Swiss Precision Optics

KEY FIGURES

Foundation: 1965

Employees: 42

SOME REFERENCES

- ESO

Patrick Eberle

Head of Business Development & Marketing

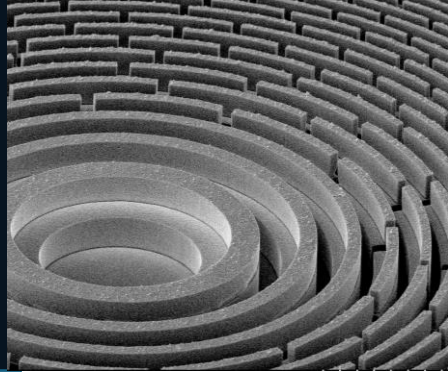
Patrick.Eberle@wzw.ch

+41 71 523 23 42

Wegenstrasse 18
9436 Balgach
Switzerland

XRnanotech GmbH

Nano- and microstructured Optics with Swiss precision



WEB SITE https://www.xrnanotech.com/

ACTIVITY KEYWORDS

Deep Silicon Etching Expertise, Blazed Gratings, Hartmann Plates, Custom 3D Nano- and Microstructures

WHO WE ARE

XRnanotech is the leading Swiss manufacturer of the highest-quality nanostructured optics, from high-aspect-ratio Fresnel zone plates with a record-breaking resolution to ultra-stable diamond optics and custom 3D nanostructures.

Our products are widely used in infrared to hard X-ray applications at Synchrotrons, XFELs, and tabletop lab sources. We thrive on innovating new optics solutions, from prototypes to series production, in close collaboration with our customers and project partners.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Deep Si Edging	Fabrication expertise of custom 3D structures in silicon using Deep Reactive Ion (DRIE) and Metal Assisted Chemical Edging (MACE).	NA
Blazed Gratings	High-efficiency diffractive transmission and reflective blazed gratings on thin membranes or silicon wafers characterized in-house.	NA
Hartmann Plates	Soft-to-hard X-ray wavefront sensors in silicon or on membranes combined with electroplated high-Z materials.	NA

XRnanotech

Kubec Adam

Director of Business Development

adam.kubec@xrnanotech.ch

+41 56 310 45 78

Park Innovaare
5234 Villigen
Switzerland

KEY FIGURES

Foundation: 2020

Employees: 13

SOME REFERENCES

- ESA Business Incubation Centre
- Best Nanotech Startup Award – Swiss Nanoscience Convention
- Deep Tech Pioneer Award – Hello Tomorrow Global Challenge

Zurich Instruments

Your Application. Measured.

WEB SITE www.zhinst.com

ACTIVITY KEYWORDS

Up to 8.5 GHz Lock-in Detections, Quantum Technologies, Optics & Photonics, Sensors, Impedance Measurements.

WHO WE ARE

Zurich Instruments builds lock-in amplifiers, quantum computing control systems, impedance analyzers, arbitrary waveform generators, phase-locked loops and boxcar averagers for scientists and technologists in advanced research laboratories. In combination with our control software, LabOne® and LabOne ® Q, these products represent the company's mission to simplify laboratory setups, support high-quality data acquisition, and unlock new measurement approaches for cutting-edge research.

PRODUCTS / TECHNOLOGY DETAILS

CATEGORY	DESCRIPTION	BRAND
Lock-in amplifiers	Lock-in Amplifiers measuring vanishingly small periodic voltage and current signals, and offering class-leading noise rejection and phase sensitivity for applications at frequencies from DC to 8.5 GHz. They are used by leading research institutes in fields including photonics, materials science, and sensor development.	
Impedance analyzers	Impedance analyzers measuring electrical impedance with high precision and accuracy for demanding applications including the characterization of materials, devices, and biological tissue.	

Zurich Instruments

Michitoshi Noguchi
Application Scientist APAC
michitoshi.noguchi@zhinst.com
+81 80 9982 6760

Zurich Instruments AG
C/O Rohde & Schwarz Japan
27F Sumitomo Fudosan Nishi-Shinjuku-Bldg.
7-20-1 Nishi-Shinjuku
Shinjuku-Ku, Tokyo 160-0023
Japan

KEY FIGURES

Foundation: 2009

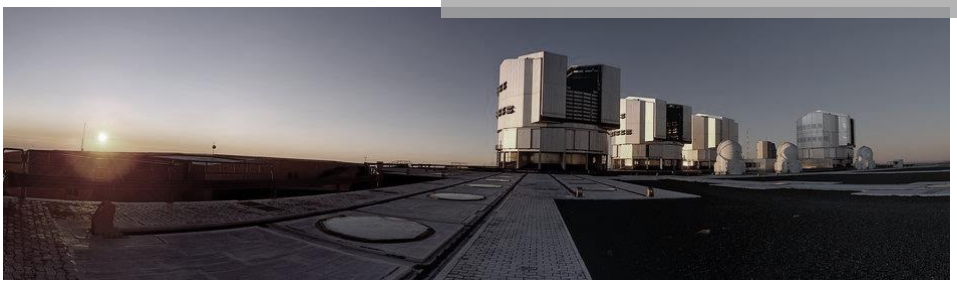
Employees: 180

SOME REFERENCES

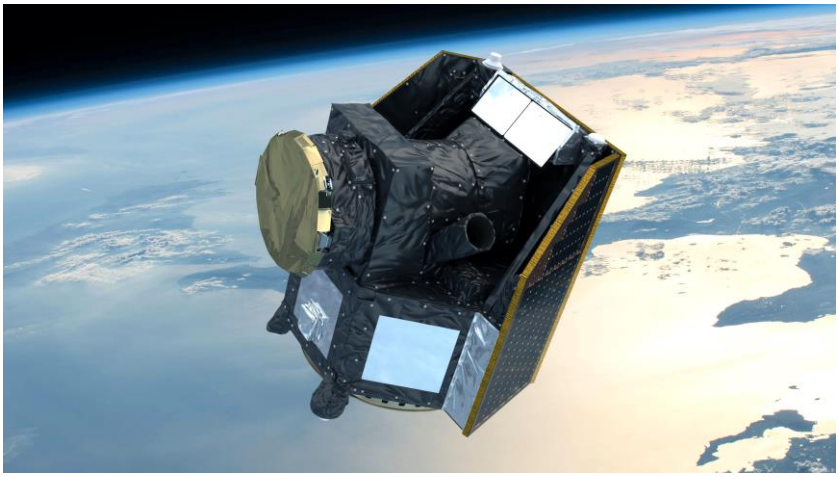
- NASA
- ESO
- CERN
- PSI

Part 2: Supportive institutions & programs

ETHZ
HEIG VD
PLANET S
SKA CH
UNIVERSITY OF BERN
UNIVERSITY OF GENEVA
UNIVERSITY OF ZURICH



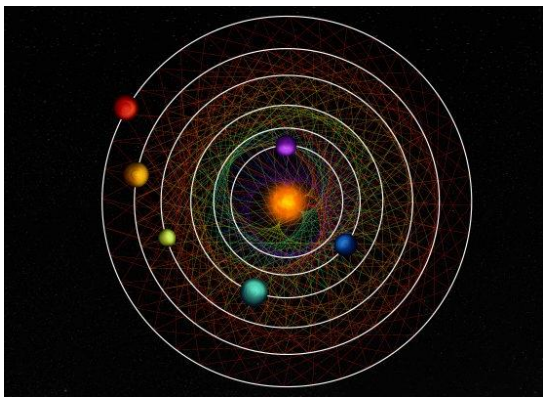
NCCR - PlanetS



The CHaracterizing ExoPlanets Satellite (CHEOPS) is a joint mission between ESA and Switzerland launched in 2019. It was the first small mission (S-mission) in ESA Programme. CHEOPS artist impression. Credit: ESA / AGT medialab

The discovery in 1995 by Swiss astronomers of the first planet outside our Solar System orbiting a Sun-like star, sparked a revolution in the field of astronomy. Rewarded by the Nobel Prize in Physics 2019, this discovery contributed to fuel instrumental development to conduct even more precise dedicated surveys, and it also helped to better understand how (exo)planets are formed and evolve.

By combining astronomical observations, remote sensing and in-situ measurements of Solar System bodies using spacecraft, laboratory work and theoretical modelling, the **NCCR(*) "PlanetS – Origin, Evolution and Characterisation of Planets"** aims to contribute to the development of planetary sciences. It was established in June'14, and brings together researchers from the Universities of Bern (leading house), Geneva (co-leading house) and Zurich, as well as the ETH Zurich.



An international collaboration using the CHEOPS and TESS space satellites, including NCCR PlanetS members found a key new system of six transiting planets orbiting a bright star HD110067 in a harmonic rhythm. Artist view. Credit: CC BY-NC-SA 4.0, Thibaut Roger/NCCR PlanetS

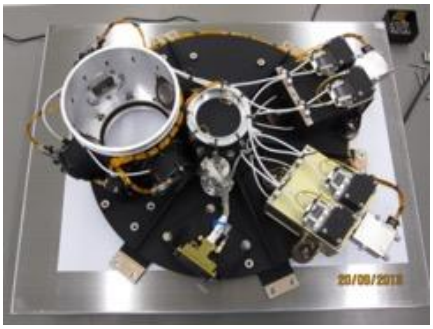
The Technology & Innovation Platform of the NCCR PlanetS fosters technology transfer, innovation and partnerships with cutting-edge industry for its research institutes.

Adaptive Optics (AO) system of the NIRPS Spectrograph at ESO's 3.6m. Credit: N.Blind, UniGe/NIRPS/ESO

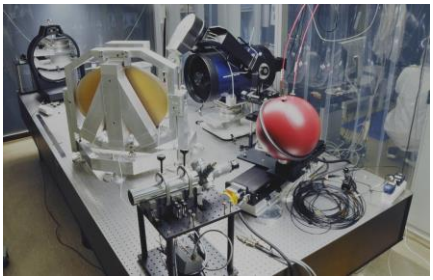
DACE web-platform dedicated to extrasolar planets data visualisation, exchange and analysis. Credit: D.Segransan et al.

(*) The National Centres of Competence in Research (NCCR) are a funding scheme of the Swiss National Science Foundation

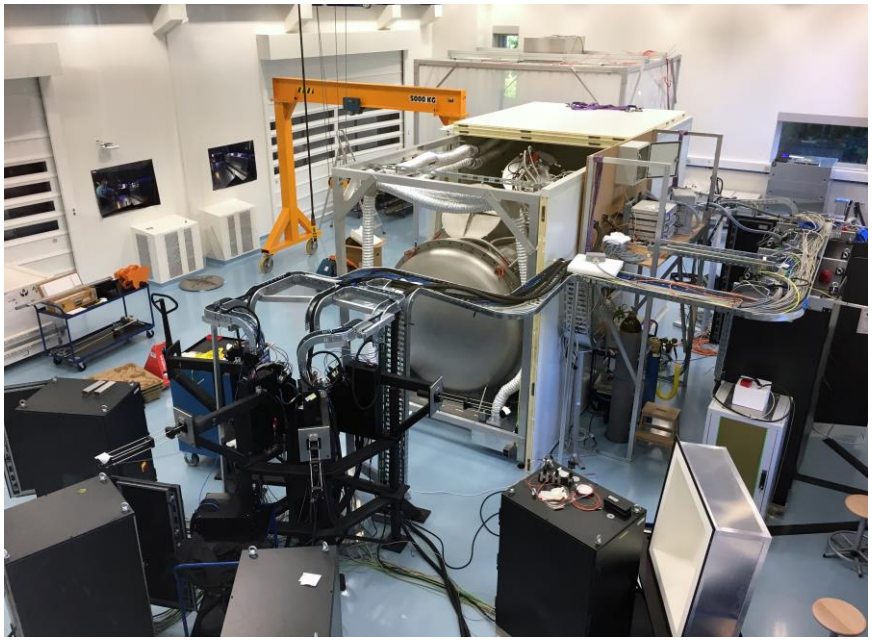
Department of Astronomy



Hitomi's filter wheel development



CHEOPS' absolute photometric capability characterisation



Integration and testing of the Espresso spectrograph at UNIGE before its installation at ESO's VLT

The Department of Astronomy of the University of Geneva, in short ***Geneva Observatory*** (180 employees), has kept a long-standing tradition in the development of (astronomical) instrumentation since 1772. We believe that the development of cutting-edge instrumentation is critical for opening new parameter spaces and to enable new discoveries. On the other hand, active participation to the instrumentation development helps us exploiting them in an optimum way.

Expertise and past projects: Design, manufacturing, integration, testing and operation of world-wide most precise **EPRV and high-fidelity spectrographs; fibre assemblies and calibration systems; scientific satellites' payload components; data reduction and data analysis systems.**

HARPS(-N,-3), NIRPS, ESPRESSO, CORALIE, DACE, MODA, ESPRESSO DRS, EUCLID, CHEOPS, etc.

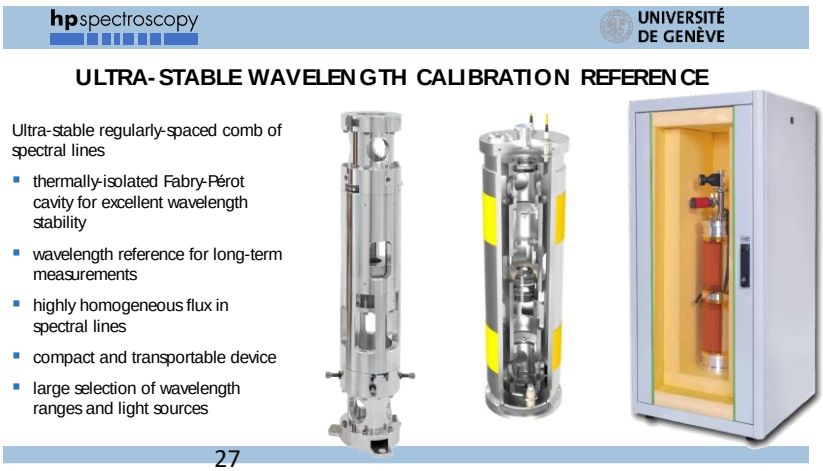
Industrial collaborations with APCO-Technologies SA, CSEM, Fisba Optik AG, HP-Spectroscopy, Schott AG, Virgo THE, WZW Optic AG, etc.

(Selection of) ongoing projects:

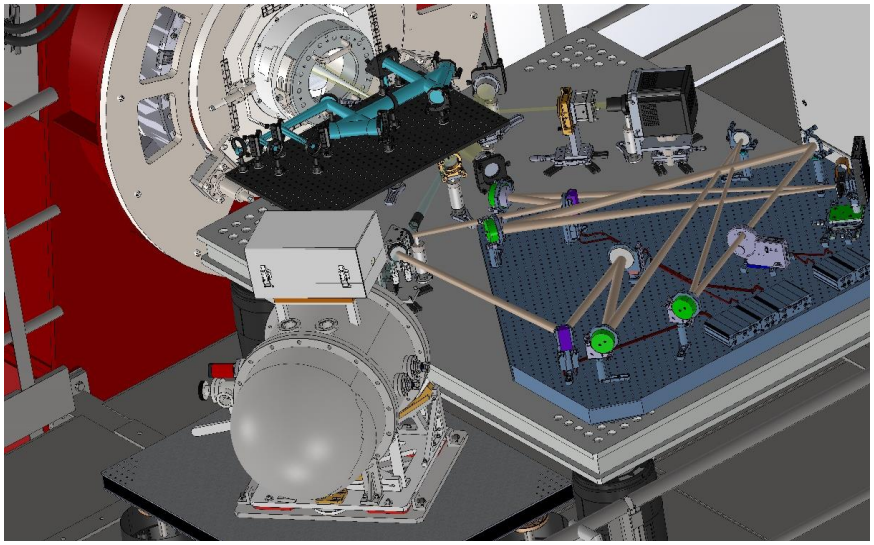
Leading the design and construction of the Red Visible spectrograph for **ANDES** high-resolution spectrograph on the ESO Extremely Large Telescope.

Pioneering the coupling of high-contrast imaging and high-resolution spectroscopy in the visible with the **RISTRETTO** project to detect the reflected light of Proxima B, the closest potentially habitable rocky planet.

Euclid satellite's shutter tests



Division of Space & Planetary Sciences



The Programmable Liquid-crystal Active Coronagraphic Imager for the 4-m DAG (PLACID) instrument was delivered to site (Karakaya Ridge, Erzurum, Turkey) in March 2024. First light is foreseen for late 2024/early 2025.

The Division of Space and Planetary Sciences of the University of Bern his a world leader in space- and ground-based instrumentation, with strong legacy and current involvement in missions and projects to explore the solar system and to search for and characterize extrasolar planets.

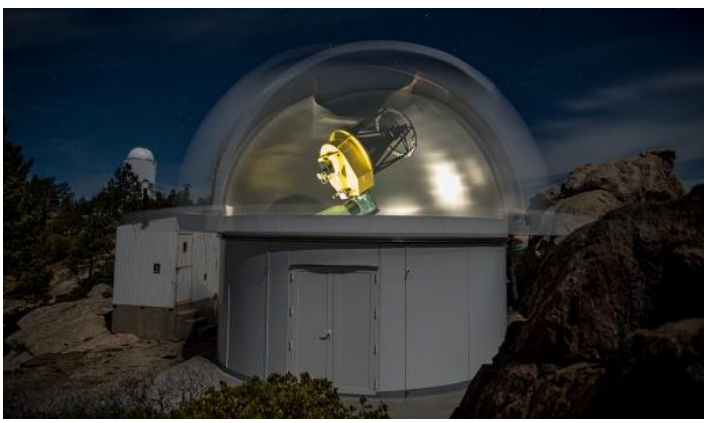
Projects and expertise

Space- and ground-based exoplanets observations: **ESA/CHEOPS space telescope** (transit photometry), **PLACID instrument for the 4-m DAG telescope** (direct imaging), **SAINT-EX 1-m telescope** (transit photometry), **end-to-end Bern model for planetary formation.**

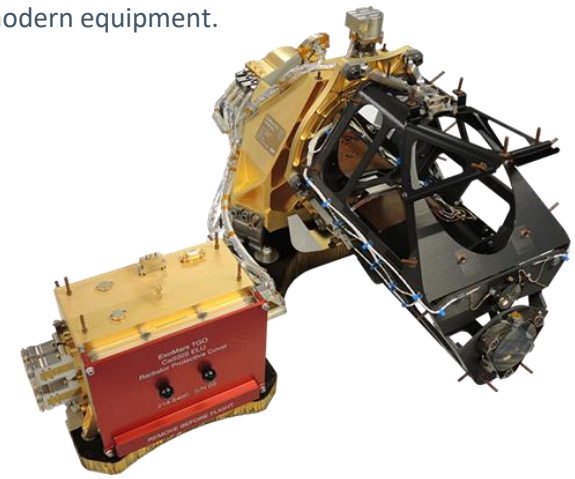
Key contributions to major ESA and NASA space missions since the Apollo-era: **Solar Wind Collector (SWC)** experiment during **Apollo 11, 12, 14, 15** and **16, ESA/Rosetta** mission to comet 67P/TG, **CaSSIS instrument on the ESA/TGO** at Mars, **ESA/BepiColombo** mission to Mercury, **ESA/JUICE** mission to Jupiter, **ESA/Comet Interceptor, ESA/PLATO, LIMS** instrument on **NASA/CLPS** initiative to the Moon, etc.

On-site facilities notably include:

- Vibration, thermal-vacuum and CASYMIR mass spectrometer calibration test facilities.
- CHEOPS laboratory, with a most modern thermal-vacuum facility in an ISO 5 environment.
- The CaSSIS laboratory ISO 5 clean room with optical test equipment (integration room for flight hardware).
- Swiss Wideband Active Testbed for Coronagraphic High-contrast imaging (SWATCHi).
- State-of-the-art mechanical and electronics workshops with modern equipment.



The 1-m fully-robotic SAINT-EX telescope at night, San Pedro Mártir, Mexico. Credit: Ilse Plauchu-Frayn



The CaSSIS camera aboard the Mars Trace Gas Orbiter

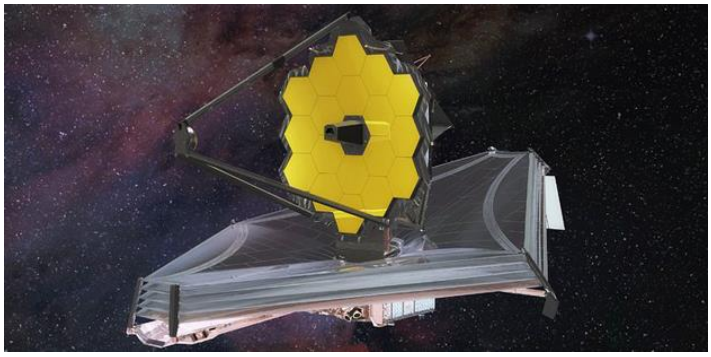
Laboratory for Astronomical Instrumentation

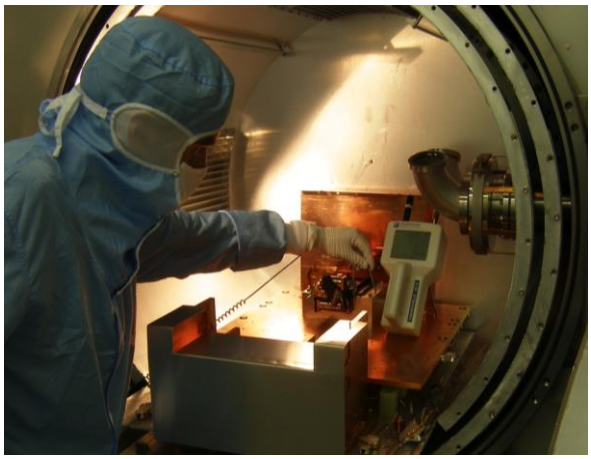
The Laboratory for Astronomical Instrumentation at ETH Zurich is a unit of the **research group for Exoplanets and Habitability**. Our mission is to develop technologies and instruments for the world's largest telescopes, both ground- and space-based, keys for tomorrow's discoveries in exoplanetary science.

Projects and expertise

Instrument Systems Engineering, Cryogenics, Infrared, Optics, Mechanisms, Spectroscopy, Interferometry, Direct Imaging, Calibration, Commissioning, Technology Development

Contributions to the **Mid Infrared Instrument (MIRI) of the James Webb Space Telescope** included the development of the cryogenic cabling (together with Syderal SA) and the Contamination Control Cover (together with Beyond Gravity), the support of the cryogenic tests of MIRI at instrument and telescope level, and the commissioning and calibration of MIRI.



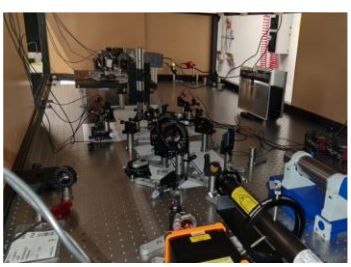


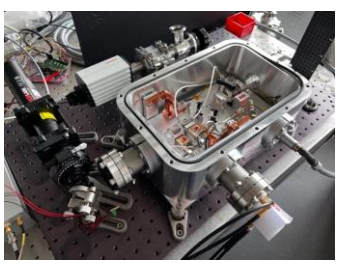
Above: The **Contamination Control Cover** for the Mid Infrared Instrument of the James Webb Space Telescope in the Cryogenic Test chambers at the Paul Scherrer Institute.
Left: The James Webb Space Telescope. Credit: NASA/ESA

For the **ESO Extremely Large Telescope** our group leads the overall Systems Engineering of the **METIS** instrument and provides the 2.8 m x 2.7 m big cryostat for reaching temperatures at 40K.

Above: The bottom segment of the **Cryostat** during manufacturing. Credit: Dal Ben
Left: The METIS Instrument. Credit: ESO/METIS Consortium/L. Calçada

We lead the global initiative for promoting the **Large Interferometer for Exoplanets (LIFE)**, a free-formation flying nulling-interferometer mission to detect and characterise dozens of terrestrial exoplanets with the goal of finding evidence for life beyond the Solar System.

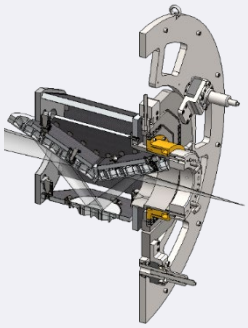




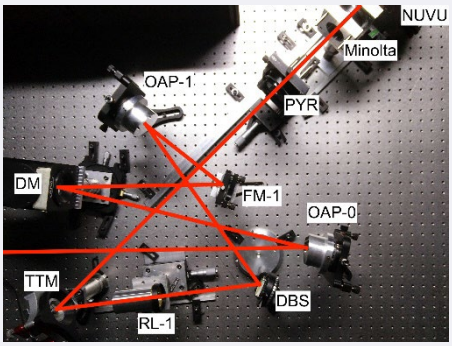
Above: Concept of the **Large Interferometer for Exoplanets** (LIFE).
Left: The technology demonstrator experiment **NICE** (warm phase).

HEIG-VD - OptoLab

DAG 4-m telescope (manufact. AMOS & EIE, Belgium, Italy)



KORAY, DAG derotator



TROIA, DAG adaptive optics system

OptoLab *brings together a team of scientists and engineers to design & build complex opto-mechanical systems for research institutes and industries.*

Know-how and Expertise

Adaptive optics: from design to implementation

- DAG 4-m telescope AO project
- AO telemetry data post-processing (PSF reconstruction)

Science instruments for astronomy

- Stellar coronagraph for exoplanets research – from design to implementation (PLACID project, University of Bern and Atatürk University)

Opto-mechatronic and systems engineering

- Development, design & prototyping of high-precision opto-mechatronics systems, integrating optics, photonics, precision mechanics, electronics and software.

Opto-mechatronic systems modelling

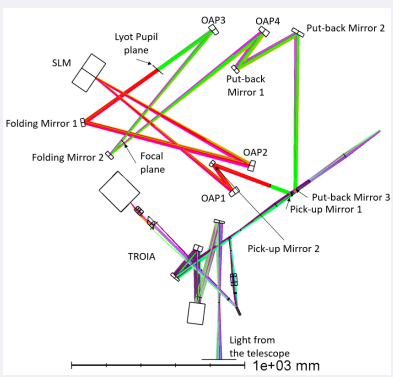
- Analytical & end-to-end models

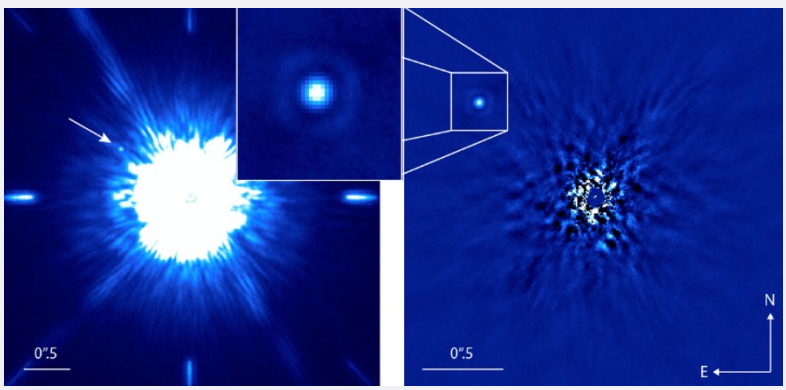
Recent Astronomy-related Projects

- DAG 4-m telescope: optical design (done)
- TROIA : extreme adaptive optics system for DAG (WIP)
- KORAY: telescope integrated K-mirror derotator for DAG (done)
- PLACID: stellar coronagraph for DAG (done)

Education and Opportunities

We provide Bachelor Thesis opportunities for students to engage in industrial or applied research projects, fostering hands-on learning experiences.



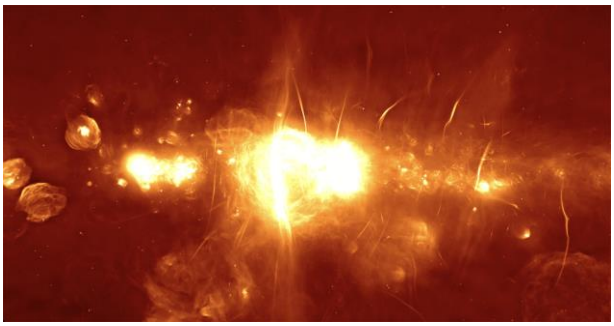


Square Kilometer Array Switzerland

Artists impression SKA arrays South Africa and Australia during the day © SKAO

In January 2022, Switzerland officially joined a great adventure – the Square Kilometer Array Observatory (SKAO), an international organization currently building the world's biggest radio telescope to unlock some of the greatest mysteries of the universe. By the end of the decade there will be hundreds of dishes in South Africa at the mid-frequency range and more than 130-thousand low-frequency antennas erected in Australia. SKACH is leading Switzerland's contributions to the SKAO on behalf of the State Secretariat of Science, Innovation, Research, and Education (SERI). Comprised of ten Swiss institutions it is delivering contributions to the SKAO in five key programs: Science, Data Science, Computing Platforms and Infrastructure, Instrumentation, and Education and Public Outreach. Switzerland has committed more than 33-million CHF to 2030 towards the construction and early operation of the Array, which will collect unprecedented amounts of data, requiring the world's fastest supercomputers to process this in near real time. Swiss researchers will be fundamental in this work processing around ~650 PBytes/year in areas such as cosmology, dark energy and astrobiology. This next-generation radio astronomy facility will look as far back as the Cosmic Dawn, when the very first stars and galaxies formed, tackling some of the most fundamental scientific questions of our time and, with an expected operational phase of at least 50 years, it will be one of the cornerstone physics machines of the 21st century.

www.skach.org



This image, based on observations made with South Africa's MeerKAT radio telescope, a precursor to the Square Kilometer Array telescope, shows the best view yet of the central regions of the Milky Way. At the distance of the galactic center (located within the white area near image center), this 2 degree by 1 degree panorama corresponds to an area of approximately 1,000 light-years by 500 light-years. Image courtesy of MeerKAT and Green Bank Telescope (Bill Cotton, NRAO).

Artists impression, SKA-mid, South Africa

Beginning of construction, SKA-low, Australia

Historical mountain observatories in Switzerland

Gornegrat Observatory – Zermatt

Sphinx Observatory – Jungfraujoch

Notes

Notes

Notes

PlanetS
National Centre of Competence in Research

Swiss Industry Liaison Office
for International Research Organisations

UNIVERSITÉ DE GENÈVE

UNIVERSITÄT BERN

ETH zürich

HE VD IG

SKACH

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

SWISSMEM

ESO

SWITZERLAND BOOTH

Michel Hübner - Swiss ILO Office for International Research Organisations
michel.hubner@epfl.ch

Elena Benedetto – NCCR PlanetS Technology and Innovation Platform
elena.benedetto@unige.ch

VENUE

Pacifico Congress Center
1-1-1, Minato Mirai, Nishi-ku
Yokohama
Japan 220-0012

SPIE. ASTRONOMICAL TELESCOPES + INSTRUMENTATION

Event website : chk.me/TLf9Dby