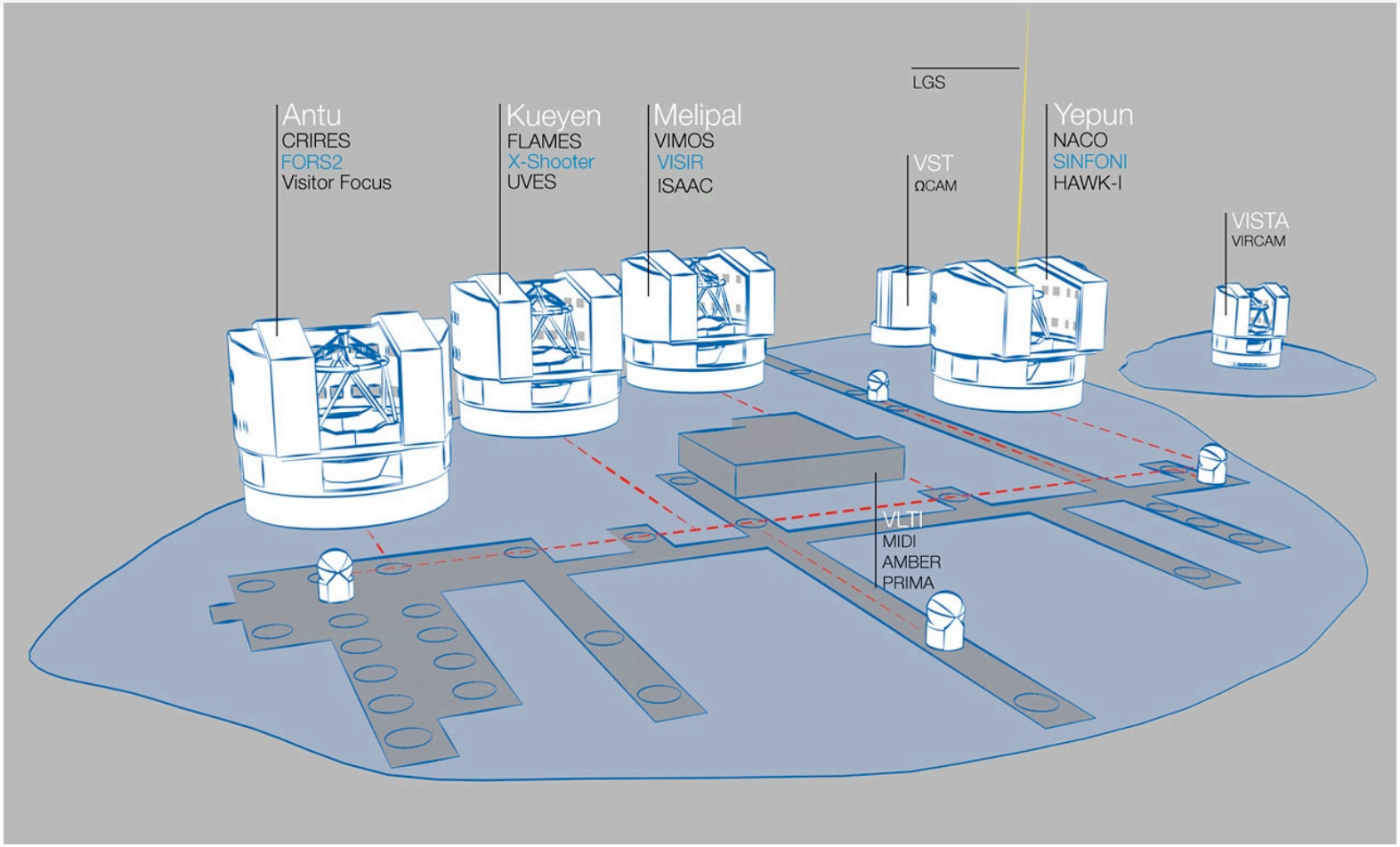
A brief overview of VLT/VLTI instruments

Markus Wittkowski
ESO User Support Department
mwittkow@eso.org

Instruments available in Paranal



All VLT/I instruments are integrated into one operations scheme.
P2PP3 is used for all instruments in principle in the same way.

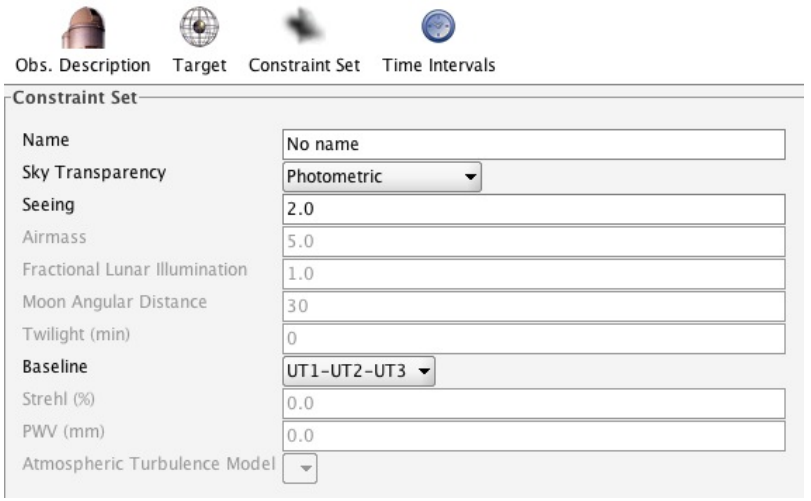
ESO Instruments Summary Table

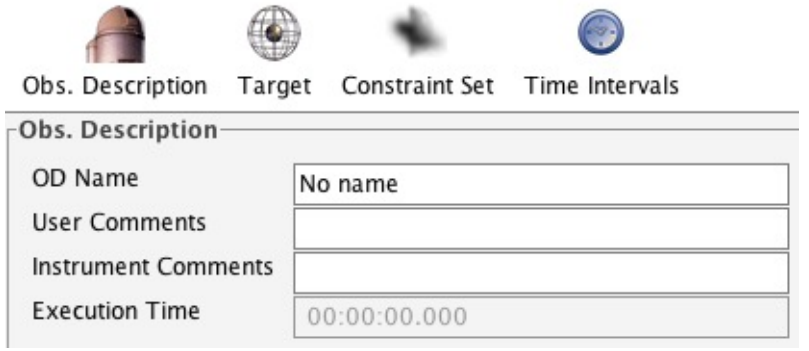
http://www.eso.org/sci/observing/phase2/sm_overview/instrument_summary.html

Instrument	Spectral Coverage	Observing Mode	Spectral Resolution	Multiplex	Note	Telescope
FORS2	optical 330 - 1100 nm	imaging (incl. configurable occulting bars), long slit and multi-object spectroscopy, spectropolarimetry, imaging polarimetry	260 - 2600	yes	Spectroscopy with ~7' long slit, ~20" multi-slit, and laser-cut slit masks; high time resolution modes (imaging and spectroscopy) in visitor mode only; RRM	VLT UT1
CRIRES	IR 1-5 µm	echelle, slit spectroscopy	100,000	no	AO	VLT UT1
UVES	optical 300 - 1100 nm	echelle, image slicer, slit spectroscopy	up to 80,000 (blue arm) / 110,000 (red arm)	no	long slit capability in single order; iodine cell; RRM	VLT UT2
FLAMES	optical 370 - 950 nm	multi-fibre echelle,integral field spectroscopy	6000 - 47000	yes	135 Medusa fibres; 15 deployable IFUs, one large IFU; GIRAFFE: single echelle order; 8 fibres to UVES	VLT UT2
X-SHOOTER	UV-optical-NIR 300 - 2500 nm	echelle, slit and integral field spectroscopy	~5000-17000	no	full spectral coverage with one pointing; slit + IFU; RRM	VLT UT2
VIMOS	optical 360 - 1000 nm	imaging, multi-object spectroscopy, integral field spectroscopy	200-2500	yes	IFU size on sky from 13"x13" to 54"x54"; multi-object spectroscopy (MOS) with 4 laser-cut slit masks; Imaging and MOS field of view 4 times 7'x8'.	VLT UT3
ISAAC	IR 1-5 µm	imaging, spectroscopy, polarimetry, fast photometry	~250-10000	no	2.5'x2.5' field of view (1-5µm), 73"x73" (3-5µm) subwindow readout capability; RRM Expected to be decommissioned in 2012.	VLT UT3
VISIR	mid-IR	imaging, spectroscopy	150-30,000	no	field of view selectable: 19"x19" to 32" x 32" after the upgrade the new FOV of	VLT UT3

Instrument-specific P2PP items

- Documentation
- Observing templates
- Constraint set
- Calibration plan
- Waiver requests
- OB naming conventions
- Preparation tools
- Finding Chart requirements
- ReadMe file requirements
- Instrument Comments field in P2PP





Instrument Comments field

- HAWK-I, ISAAC
  - IR magnitude of the brightest objects in the field
- CRIRES, FLAMES, UVES, XSHOOTER
  - Expected S/N and magnitudes
- NACO, AMBER, MIDI
  - Name of the associated calibrator or science OBs

Constraint set

- VLTI instruments:
  - Baseline configuration is a part of the constraint set
  - Mandatory use of LST constraints
- AO instruments:
  - Atmospheric turbulence model needs to be set:
    - no-AO mode: no constraint
    - AO mode: default Paranal atmosphere model
- MIR instruments (VISIR, CRIRES):
  - PWV constraint needs to be set:
    - Conditions < 1mm are very rare
    - For the ranking of these OBs, PWV is used instead of sky transparency

Phase 2 Instrument Overview Table

http://www.eso.org/sci/observing/phase2/sm_overview.html

Instrument	Policies		Change Requests	FC/README	Documentation	Tools	FAQ
General information valid for all instruments							
Paranal instruments	SM specifics OB naming	Constraints Calibrations	Waivers / Change Requests	Finding Charts README	P2PP version 3 Manual Generic P2PP3 tutorials	Exposure Time Calculators Observability	FAQ
Instrument-specific information							
AMBER	SM specifics OB Naming	Constraints Calibrations	N/A	Finding Charts README	User Manual P2PP Tutorial	-	FAQ
CRIRES	SM specifics OB Naming	Constraints Calibrations	Waivers	Finding Charts README	User Manual P2PP Tutorial	-	FAQ
FLAMES	SM specifics N/A	N/A Calibrations	Waivers	Finding Charts N/A	User Manual P2PP Tutorial	FPOSS	FAQ
FORS2	SM specifics OB Naming	N/A Calibrations	Waivers	Finding Charts N/A	User Manual P2PP Tutorial	FIMS	FAQ
HAWK-I	SM specifics N/A	Constraints Calibrations	Waivers	Finding Charts README	User Manual P2PP Tutorial	-	FAQ
ISAAC	SM specifics	Constraints	Waivers	N/A	User Manual	-	FAQ

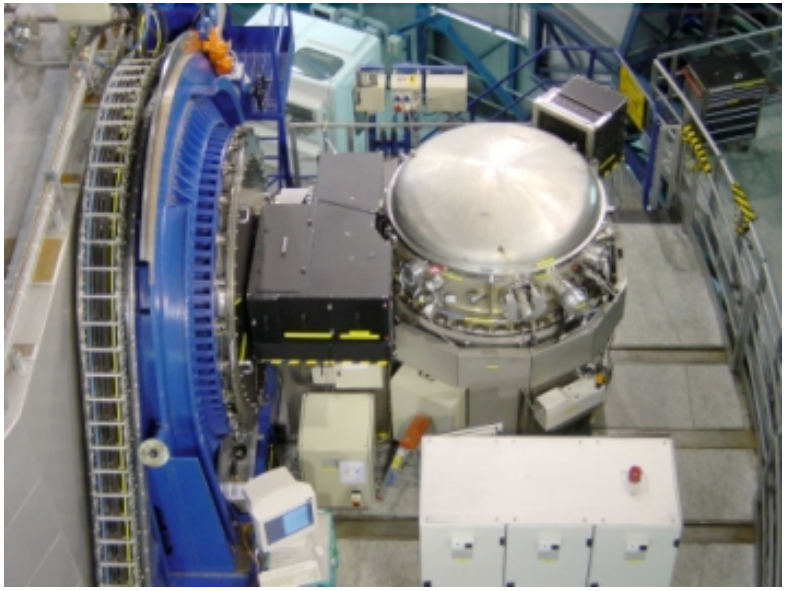
FORS2 @ UT1

- Characteristics
  - Optical
  - Imaging, long slit and multi-object spectroscopy, spectro-polarimetry, imaging polarimetry

- Tutorial
  - Mario van den Ancker
  - FIMS mask preparation

CRIRES @ UT1

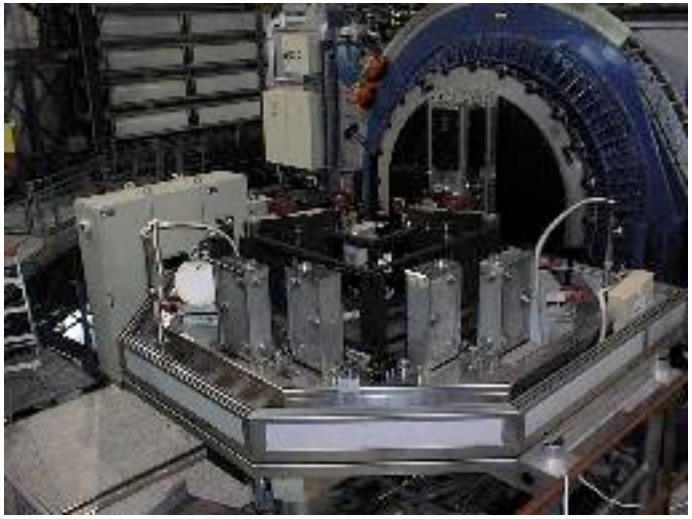
- Characteristics
  - IR (1-5 μm)
  - High-res. echelle, slit spectroscopy



- Tutorial
  - Elena Valenti

UVES @ UT2

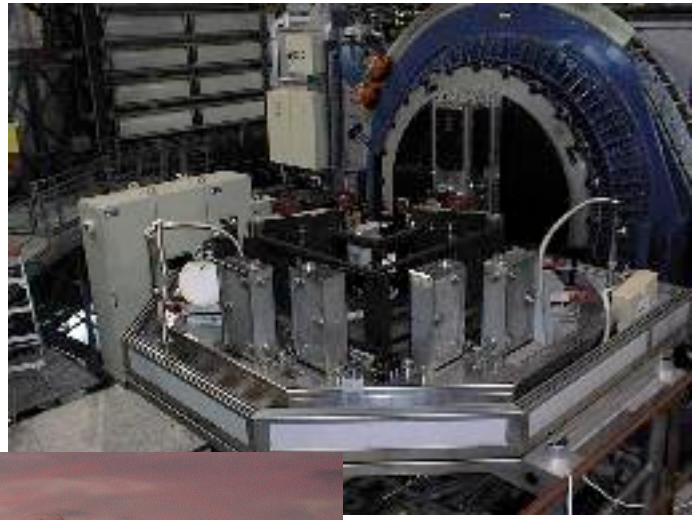
- Characteristics
  - Optical
  - High-res. echelle, image slicer, slit spectroscopy



- Tutorial
  - Rodolfo Smiljanic
  - Use of time link containers
  - Use of concatenation containers

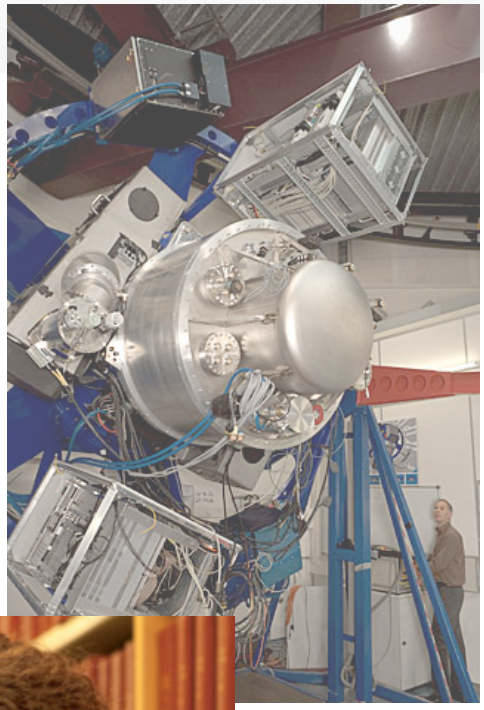
FLAMES @ UT2

- Characteristics
  - Optical
  - multi-fibre echelle,integral field spectroscopy



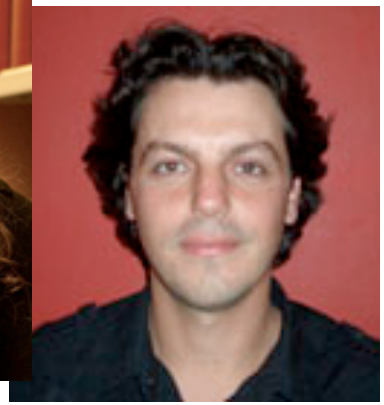
- Tutorial
  - Marina Rejkuba, Nadine Neumayer
  - Preparation software FPOSS
  - Use of group and time link containers

X-Shooter @ UT2



- Characteristics
  - UV-optical-NIR
  - echelle, slit and integral field spectroscopy

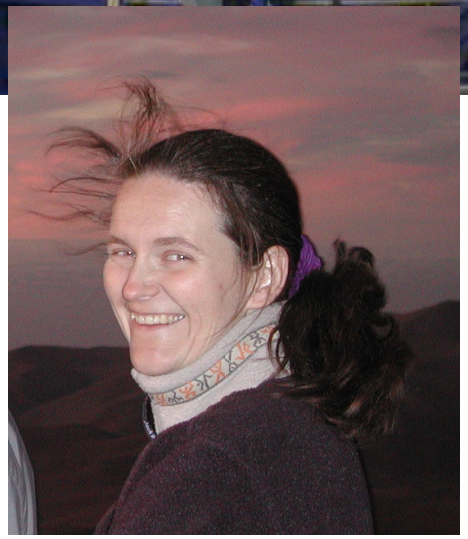
- Tutorial
  - Nadine Neumayer, Vincenzo Mainieri
  - Concatenation containers
  - Optimisation of exposure times in UVB, VIS, NIR arm
  - Blind offsets for faint targets



VIMOS @ UT3

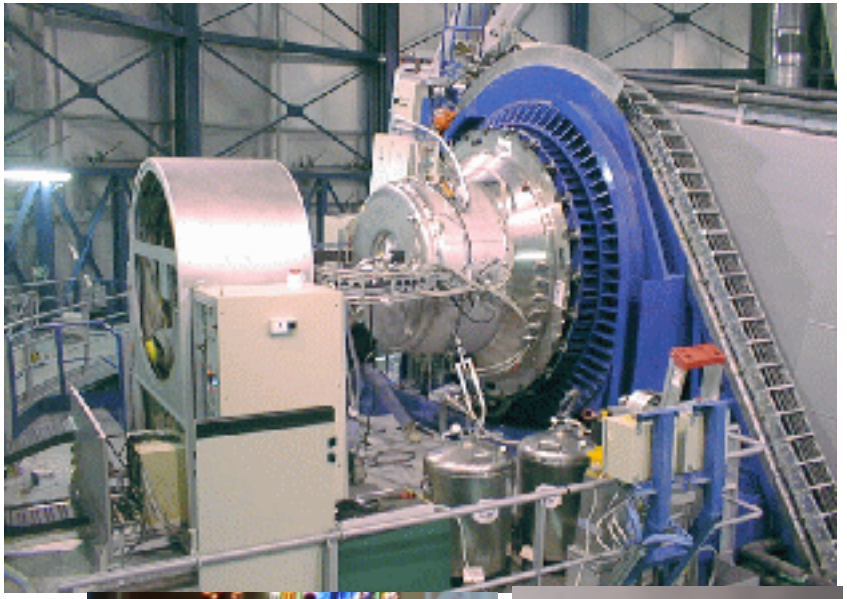
- Characteristics
  - Optical
  - imaging, multi-object spectroscopy, integral field spectroscopy

- Tutorial
  - Marina Rejkuba
  - Preparation software Guidecam and VMMPS



ISAAC @ UT3

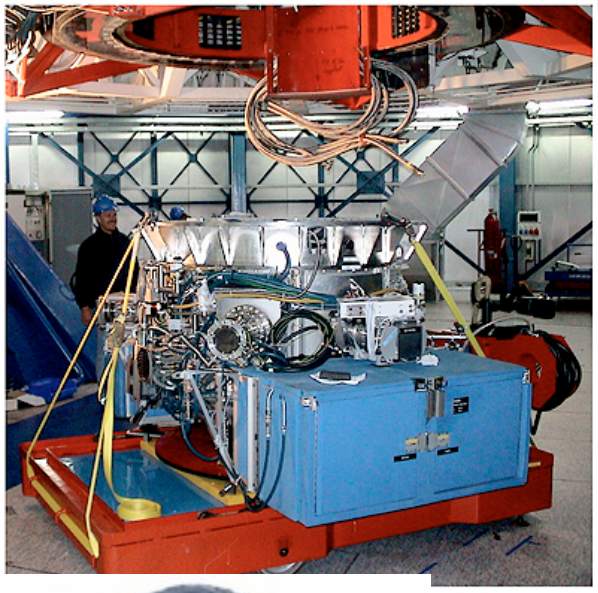
- Characteristics
  - IR (1-5 μm)
  - imaging, spectroscopy, polarimetry, fast photometry



- Tutorial
  - Monika Petr-Gotzens, Markus Wittkowski
  - preparation of highly time-critical fast phot observation

VISIR @ UT3

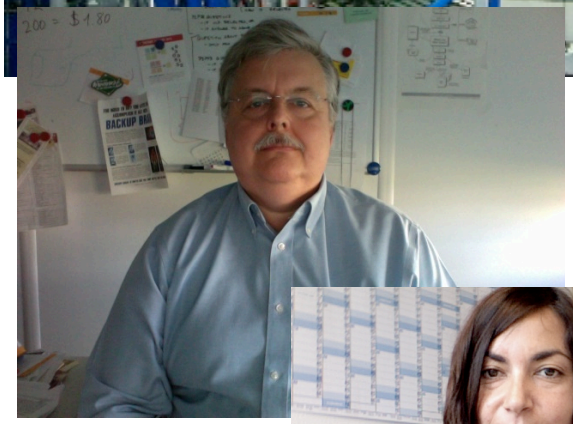
- Characteristics
  - mid-IR
  - imaging, spectroscopy



- Tutorial
  - Mario van den Ancker
  - Observations with relative time links

NACO @ UT4

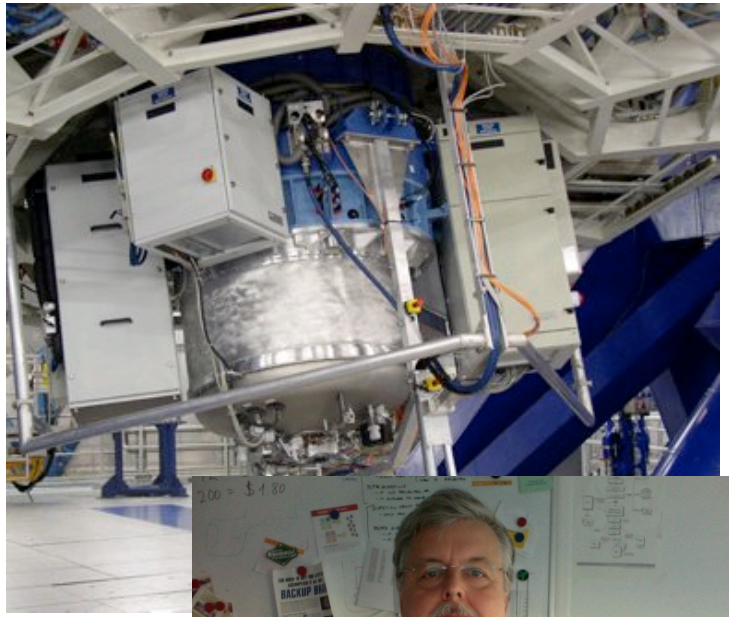
- Characteristics
  - IR (1-4 μm)
  - imaging, imaging polarimetry, spectroscopy, coronography, sparse aperture masking,…
- Tutorial
  - Lowell Tacconi-Garman, Elena Valenti

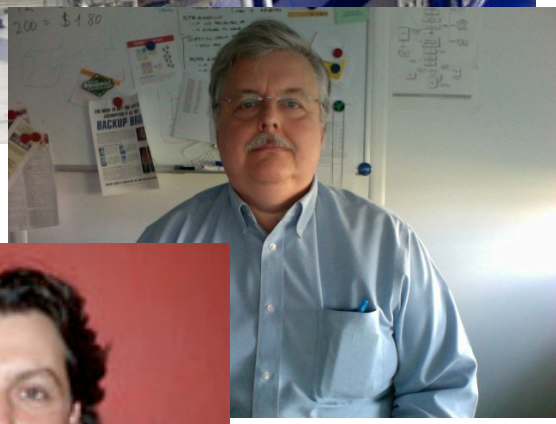


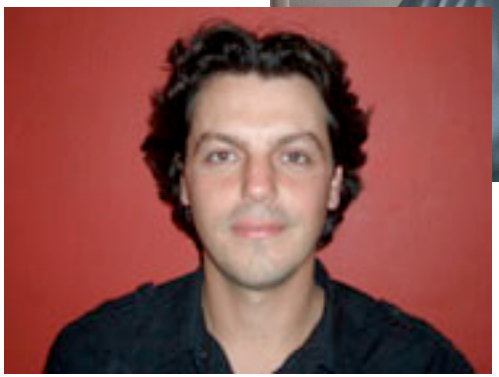
SINFONI @ UT4

- Characteristics
  - Near-IR
  - integral field spectroscopy

- Tutorial
  - Vincenzo Mainieri, Lowell Tacconi-Garman

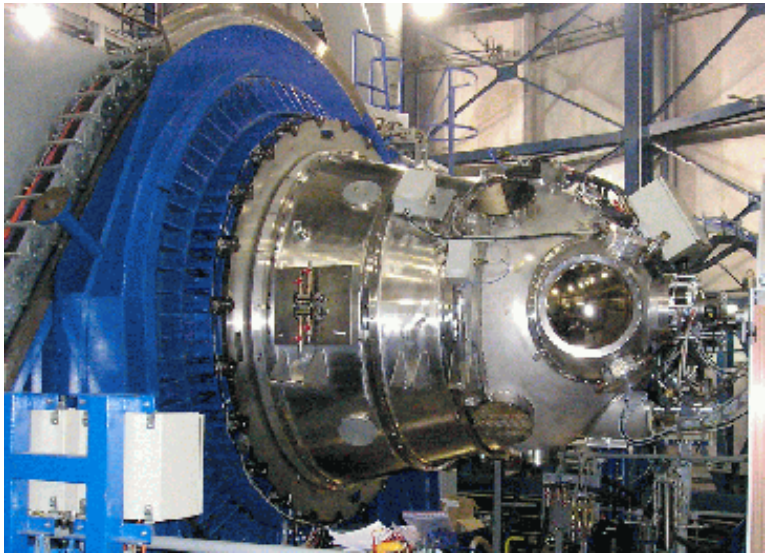






HAWK-I @ UT4

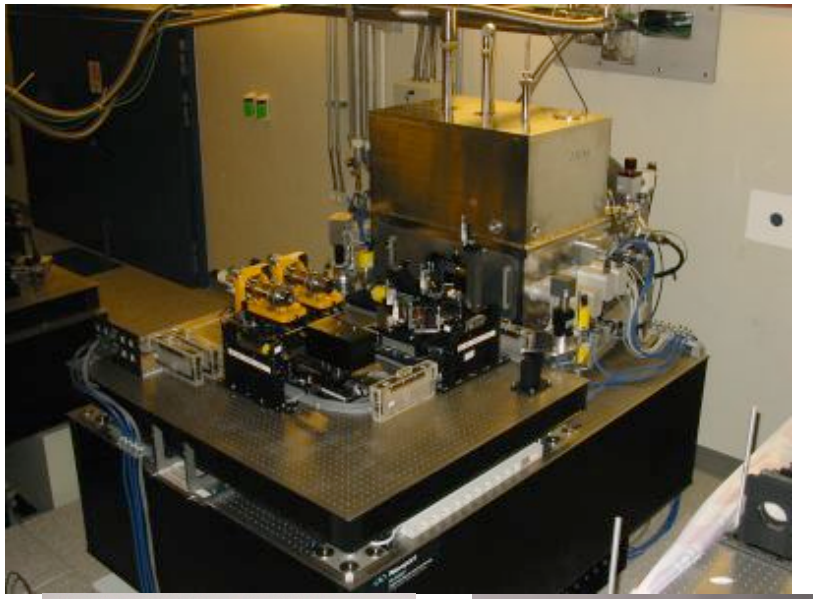
- Characteristics
  - Near-IR
  - imaging, fast photometry



- Tutorial
  - Elena Valenti

MIDI @ VLTI

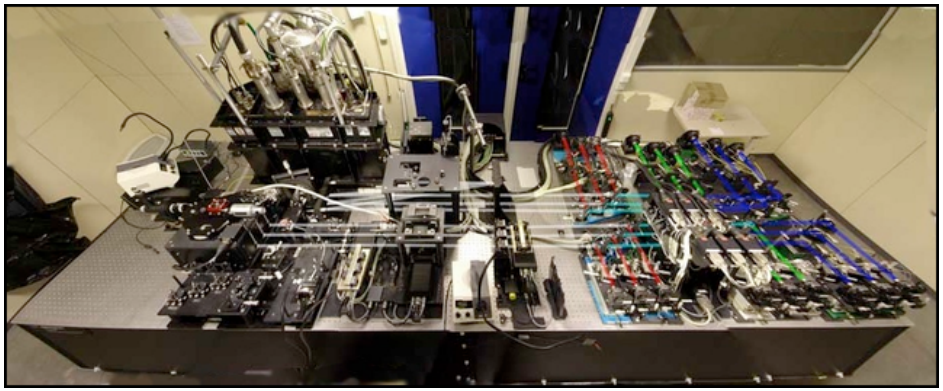
- Characteristics
  - MID-IR
  - Spectro-interferometry



- Tutorial
  - Markus Wittkowski, Christian Hummel
  - (Mandatory) use of CAL-SCI containers
  - Local Sideral Time (LST) constraints
  - Preparation tools VisCalc and CalVin

AMBER @ VLTI

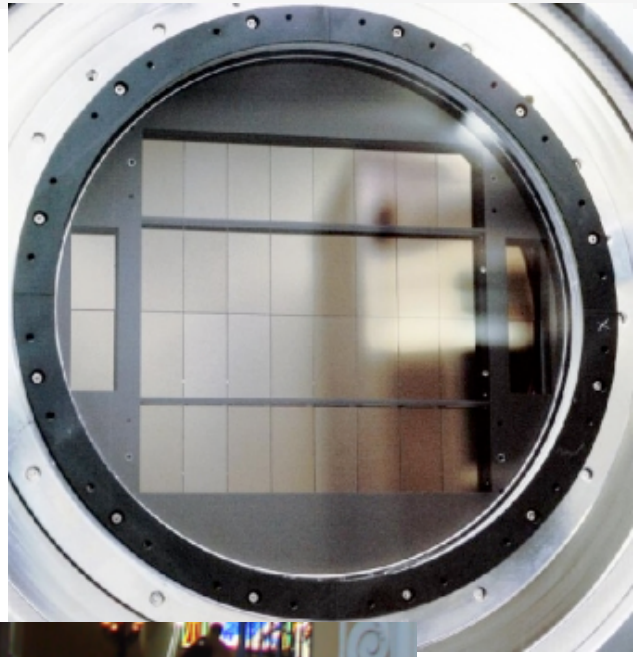
- Characteristics
  - Near-IR
  - Spectro-interferometry



- Tutorial
  - Markus Wittkowski, Christian Hummel
  - (Mandatory) use of CAL-SCI containers
  - Local Sideral Time (LST) constraints
  - Preparation tools VisCalc and CalVin

OMEGACAM @ VST

- Characteristics
  - Optical (0.35 - 0.9 micron)
  - wide-field imaging (1° x 1°)



- Tutorial
  - Monika Petr-Gotzens

VIRCAM @ VISTA

- Characteristics
  - Infrared
  - Imaging

- Tutorial
  - Marina Rejkuba