

# SOXS SCIENCE MEETING

## INTRODUCTION AND SCOPE OF THE MEETING

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*S. Campana*  
*INAF- Osservatorio astronomico di Brera*

# SUMMARY

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- SOXS Consortium organisation
- Working group organisation and internal proposals
- Scope of the meeting

## RULES



# Consortium

Institutes from 6 Countries

- ❑ Common Path, NIR Spectrograph, Control Software & Electronics, Vacuum and Cryogenics, Detectors control (INAF)
- ❑ UV/VIS Spectrograph (Weizmann)
- ❑ Acquisition Camera (Millennium Institute of Astrophysics - MAS)
- ❑ Calibration Unit (Turku University)
- ❑ Data Reduction (Queen's Un. Belfast)
- ❑ Tel Aviv University
- ❑ Neils Bohr Institute & Aarhus Univ.



מכון ויצמן למדע  
WEIZMANN INSTITUTE OF SCIENCE



Queen's University  
Belfast



INSTITUTO  
MILENIO DE  
ASTROFÍSICA



Turun yliopisto  
University of Turku

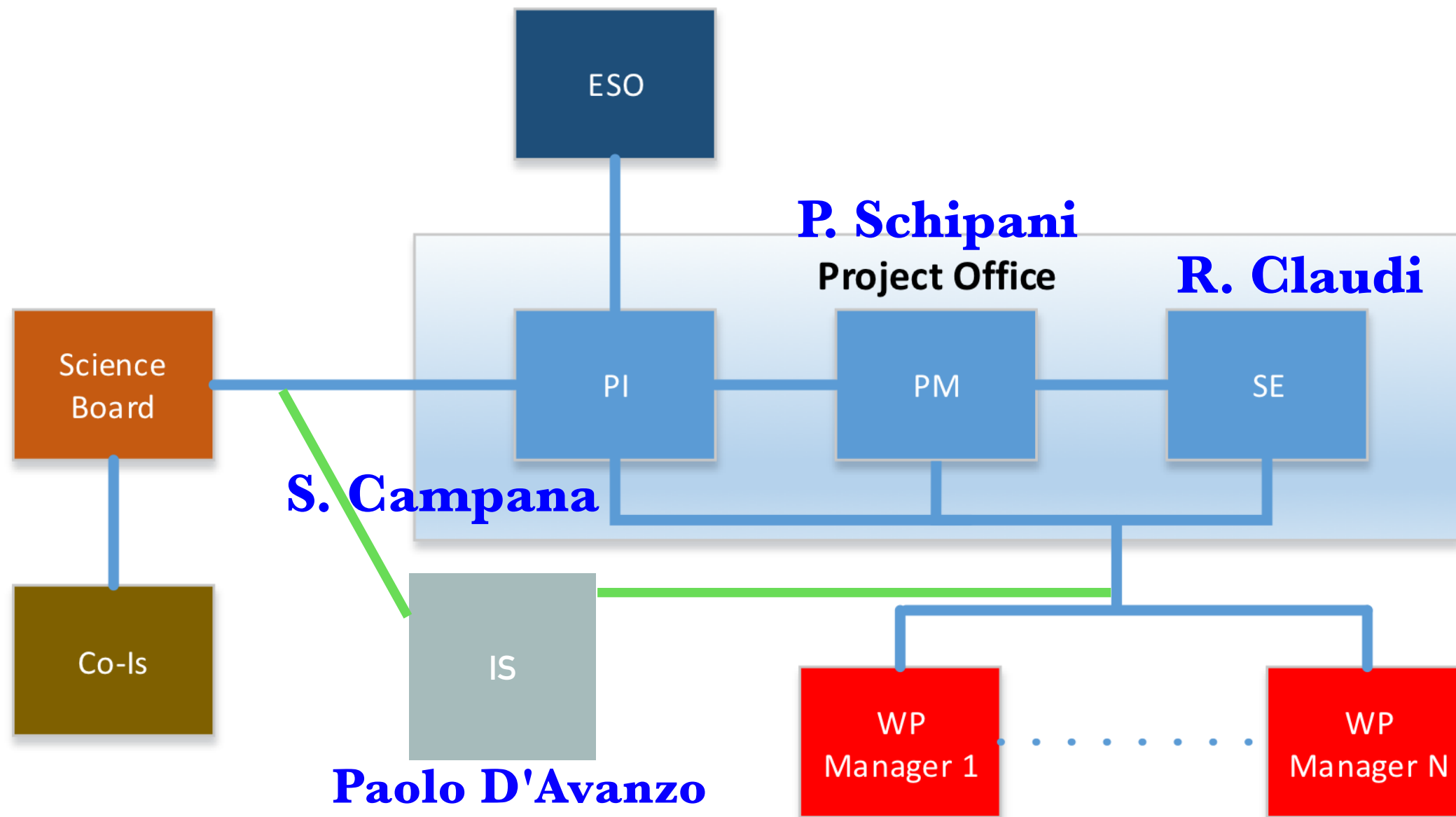


Niels Bohr Institutet



TEL AVIV UNIVERSITY

# Consortium structure





# SCIENCE BOARD

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I. Arcavi (Tel Aviv University) - Israel  
E. Cappellaro (INAF-OAPadova) - Italy  
M. Della Valle (INAF-OACapodimonte) - Italy  
A. Gal-Yam (Weizmann Institute) - Israel  
S. Mattila (Turku Univ. & FINCA) - Finland  
G. Pignata (Millenium Institute) - Chile  
S. Smartt (Queen's University Belfast) - UK  
M. Stritzinger (Aarhus University) - Denmark  
S. Campana (INAF-OABrera) - Italy

# TIMELINE

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Kick-off	September 2016
PDR	July 2017
FDR	October 2018
PAE	December 2021
Instrument in Chile	January 2022
End of Commissioning & start of GTO	October 2022 (?)

**Date to be operational on sky: end 2022  
(COVID-19 allowing)**

# SOXS GTO PROGRAM

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- 180 n/yr for 5 yr
- Bad weather shared with ESO
- Time:  $8.5 \text{ hr} * 0.75 \text{ eff} * 0.9 \text{ good} * 180 \text{ n/yr} \sim 1000 \text{ hr/yr}$
- SOXS GTO fully dedicated to Target of Opportunity observations for transient and variable sources, very limited time for long term monitoring of variable sources

# DATA POLICY

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SOXS-GTO sources selected with clear triggering criteria. We offer ESO to make our triggering criteria public, before the start of the operations (and updated every 6 months).

Consortium GTO data will remain private for 12 months (or when data are published).

SOXS will also take **classification spectra** of sources from optical surveys (**up to 25%** of SoXS GTO observing time). These data can be claimed by the SOXS Consortium within 3 days, if they fall under a GTO proposal (and will then remain private for 12 months). Otherwise classification data are public.



# OPERATIONS

*see Paolo's talk*

- Together with the GTO we won also to be in charge for the NTT operations
- We have to produce on a night-by-night the observing schedule
- The schedule is flexible and no there are no pre-assigned nights
- ESO and SOXS-GTO observations can be flexibly scheduled
- This requires work and planning but it will give us the opportunity to trigger our observations at **any moment** and to change the schedule **during** the night

# SOXS SCIENCE WORKING GROUPS

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*To organise the Consortium science work*

- Virtual places open for discussion
- Virtual places to discuss on the science topic and try to overcome barriers
- First place where try to coordinate efforts and internal proposals
- **No** pre-defined time share allocated to each Science WG (if it were flat, it would be  $\sim 60$  hr/yr)

# SOXS SCIENCE WORKING GROUPS: LEADERS & DEPUTIES

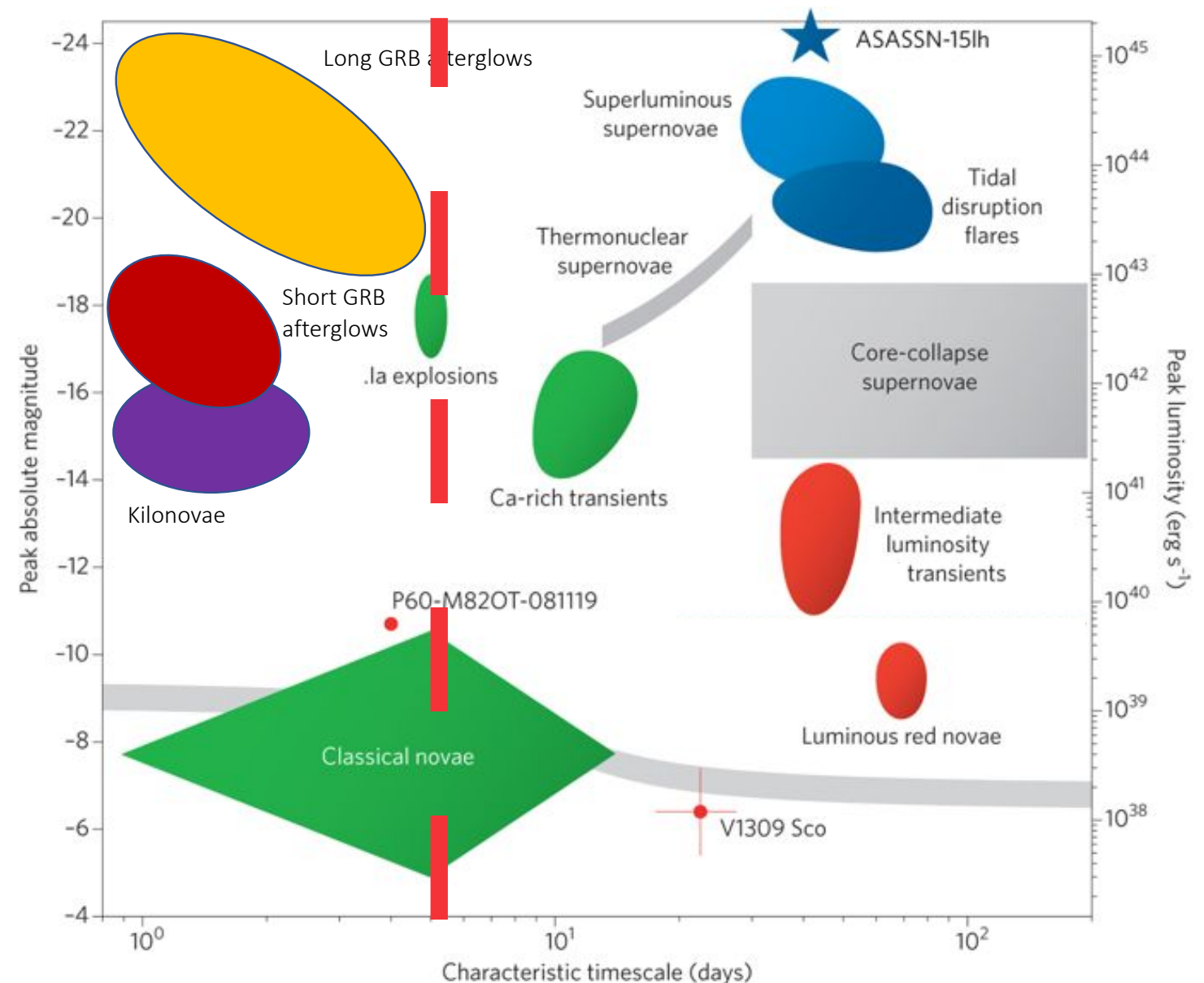
W G	WG Topic	WG Leader	WG Deputy	Number of participants
1	Small bodies and comets	Fitzsimmond	Dotto	11
2	Stellar variability, exoplanets and Young	Pagano	Alcalà	20
3	Transient X-ray binaries, magnetars, ultra-luminous	Casella	Veledina	20
4	Cataclysmic variables, novae and white dwarfs	Della Valle	Ben-Ami	9
5	Supernovae Ia and thermonuclear transients	Stritzinger	Kotak	15
6	Fast and extreme transients (including SLSNe)	Arcavi	—	17
7	Intermediate luminosity transients	Kotak	Pastorello	20
8	Core Collapse Supernovae	Gal-Yam	Pignata	22
9	AGN and blazars	Landoni	—	17
10	Tidal Disruption and Nuclear Events	Mattila	Arcavi	10
11	Gamma Ray bursts & Fast radio bursts	D'Avanzo	Fynbo	10
12	Gravitational wave and neutrino counterparts	Campana	Smartt	28
13	Classification	Benetti	Botticella	26

# SOXS SCIENCE CASES

*ZTF/SEDM - 4MOST/TIDES*

- Classification (service)
- **SN (all flavours)**
- **GW &  $\nu$**
- **TDE & Nuclear transients**
- **GRB & FRB**
- X-ray binaries & magnetars
- Novae & White dwarfs
- Asteroids & Comets
- Young Stellar Objects & Stars
- Blazars & AGN
- Unknown

- **Rapid follow-up**
- **Dense monitoring**



# SOXS SCIENCE WORKING GROUPS: WG LEADER

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- The WG Leader (or coordinator) is a “primus inter pares”
- Being a WG leader does not imply to be automatically part of proposals and papers
- The WG Leader is appointed by the SOXS Board for his/her scientific merit and with no relation to time shares
- The WG Leader is informed about publications within her/his science working group
- The WG Leader writes at the end of each year a brief report on the activities of the WG
- The WG Leader can rotate on yearly basis

# SOXS SCIENCE WORKING GROUPS: MEMBERS

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- Members of the SOXS Consortium can freely apply to become members of different Science WG, with grain of salt.
- Being a member of a WG does not imply to be automatically part of proposals and papers.
- For this initial iteration, only staff and post-docs from Consortium institutes.



# INTERNAL PROPOSALS

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*SOXS Consortium will have access to 180 n/yr, no matter what (except bad weather and SOXS technical time, i.e. Chilean time is on ESO)*

- Internal proposals are similar to PESSTO bids
- Internal proposals have a PI and a number of co-I of all nationalities, if needed
- Internal proposals need clear and well defined triggering criteria
- WGs are the first place where to discuss about internal proposals and where first try to sort out conflicts. If not, two or more separate internal proposals are presented to the SOXS Science Board, and the Board will sort them out.
- Any member of a founding institute can submit SOXS internal proposals.

# INTERNAL PROPOSALS: TIME SHARE

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Institute	Approx. Time(%)	(25% for classif.)
INAF (Italia)	<b>49%</b>	<b>~380hr/ yr</b>
Weizmann Institute (Israel)	<b>24%</b>	<b>~185hr/ yr</b>
Queen's University Belfast (UK) Millennium Institute	<b>8%</b>	<b>~62hr/ yr</b>
University of Turku - FINCA (Finland)	<b>7%</b>	<b>~54hr/ yr</b>
Millennium Institute - MAS (Chile)	<b>6%</b>	<b>~46hr/ yr</b>
Tel Aviv University (Israel)	<b>4%</b>	<b>~30hr/ yr</b>
Neils Bohr Institute (Denmark)	<b>2%</b>	<b>~15hr/ yr</b>

*Internal proposals time will be distributed in (rough) proportion to the time shares above.*

- In case of a single PI, the time request of the internal proposal is ascribed to the PI institute*
- In case of multiple PIs, the time request is shared (in any proportion, if needed) among PI(s) institutes*

# INTERNAL PROPOSAL: DEFINITION

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- Internal proposals can be single PI (in this case the entire time request is ascribed to PI's country) or with shared PIs (in this case it is important to define time shares for the different countries, which can be any fraction).
- From each WG there can be as many internal proposals as needed. The WG are free to set up the best way to pursue the science objective. A single proposal from a WG should have the time shares properly defined.

# INTERNAL PROPOSAL: DECISION

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- The SOXS Science Board will decide on internal proposals:
  - to accept them
  - to reduce time
  - to sort out conflicts
  - to monitor the publication of the results
  - ◉ maintaining the time share proportionality
- The SOXS PI will keep track of all proposals (and papers)

# INTERNAL PROPOSALS: PATH TO ESO

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- Each internal proposal should have very clear triggering criteria
- Triggering criteria may be made public by ESO in advance
- Internal proposals will be grouped into 4 big GTO proposals to be submitted to ESO every semester
- Only targets within these GTO proposals could be observed by SOXS (so think to even remote events, e.g. Galactic SN)
- ESO-GTO PI proposals to be decided (also on rotation)

# PUBLICATION POLICY: GENERAL PRINCIPLES

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- Give credits to whom is doing the science work (no alphabetic order)
- Give credit to whom built the instrument (include also builders in papers)
- Give internal proposals PI the freedom to exploit their data
- Exploit at best SOXS results, with a high return in the number of papers



# AIM OF THIS MEETING

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- Start the scientific discussion about the use of SOXS GTO
- Know each other and start working together
- Make of checksum of the internal resources and science interests
- Try the exercise of putting together a SOXS science case
- Sum up the requested time at the Consortium level and at the National level

**Let's start!**