Son Of X-Shooter

SOXS

PUBLICATION POLICY AND MEMBERSHIP

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2.1 Applicable Documents

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2.2 Reference Documents

Ref.	Document title	Document ID

3 SOXS membership policy

This section outlines the SOXS Consortium membership policy. Membership of the SOXS Consortium gives the right to submit SOXS internal proposals within the Consortium Guarantee Time Observations (ESO-GTO), as a principal investigator or co-investigator.

Founding members of SOXS are:
- Istituto Nazionale di AstroFisica (*INAF*), Italy
- Weizmann Institute (*Weizmann*), Israel
- Queen's University Belfast (*QUB*), UK
- FINCA: University of Turku, Helsinki, Aalto, Oulu (*FINCA*), Finland
- Millennium Institute of Astrophysics (*MAS*), Chile
- Tel Aviv University (*TAU*), Israel
- Cosmic DAWN Center and Aarhus University (*DAWN*), Denmark

MAS is an institute is made of astronomers associated with several Chilean Universities and therefore all are a part of the SOXS Consortium, as is in also the case of FINCA, consisting of Finnish universities. INAF deserves some more details, being the Italian Institute for Astrophysics born from the merging of various Italian National Observatories and Space institutes. INAF institutes directly involved in SOXS are:
- Osservatorio astronomico di Brera
- Osservatorio astronomico di Capodimonte
- Osservatorio astronomico di Padova
- Osservatorio astronomico di Catania
- Osservatorio astronomico di Roma
- Fundacion Galileo Galilei

Scientists from these institutes are SOXS members and can submit SOXS internal proposals (see Section 5) for the ESO-GTO[1]. Scientists from these institutes can be co-Investigators of SOXS proposals.

Science Board members can also propose affiliated groups or new members. The PI of SOXS can approve such affiliated groups or new members following the recommendation by the SOXS Science Board.

3.1 Applications from outside the SOXS Consortium

Scientists, groups or institutes can be considered to be accepted as an affiliated group or full members in the SOXS Consortium following an application to the PI of SOXS and the Science Board. If the scientist/group/institute is within the same country as one of the founding member institutes the application is first sent to the SOXS Science Board member of that country. The Science Board member can then forward this application to the Board or can decide not to support the application. The SOXS Science Board will review these applications. If the SOXS Board and PI support the application the scientist/group/institute can become a full SOXS member, under their own country's share of the SOXS GTO.

A new group could also find an agreement with one of the SOXS founding members in terms of funds and/or help in the operations in exchange of observing time under the country's time share, for well-defined science topics. The terms of this tentative one-to-one agreement

[1] The total amount of observing time for the SOXS Consortium comprising the ESO-GTO is 180 nights per year for five years.

have to disclosed and be approved anyway by the SOXS Science Board.

If the scientist is not affiliated to an institute of a founding country, they have to provide funds and/or personpower to enter into the project. Application should be presented to the PI of SOXS. The SOXS Board will evaluate the membership application and, if approved, time-shares will be recomputed (see 3.3).

3.2 Affiliated external groups

An external group within ESO member countries can apply for the SOXS time available for the community outside the SOXS Consortium in coordination with the Consortium, becoming an affiliated external group. This would help to bridge efforts of SOXS members and external community, and allow us to coordinate and to maximise scientific potential. This avenue would likely provide more time to observe variable/transient objects. This scheme allows also the external group(s) to focus on science topics not included in the SOXS GTO (or included but for a clearly different triggering criteria). For this scheme to be effective an a priori coordination between the SOXS Consortium and the external community is, however, required. In this scheme a request to the PI of SOXS should be put forward by the proposing group, then followed by a discussion and approval by the SOXS Science Board. Clearly, the SOXS Science Board will have the right of refusal to work with this scheme with external people. The affiliated group(s) are encouraged to provide a contribution to the SOXS project, such as, some person for the operations (in practice the operations will be done together with the SOXS team, therefore allowing the affiliated group to have also some control of the observations).

3.3 Groups joining as full members or proposal co-Is

The preferred way for an external group to enter into the SOXS Consortium is to provide direct help with the instrument operations. Being in charge of the SOXS operations for one week out of nine (approximately one week in two months) for the entire 5 years of SOXS operations, will provide access to 2.3% of the observing time, with the founding members' timeshares recalculated accordingly. A direct contribution in funds is discouraged and to gain the same 2.3% timeshare a new external group should contribute 575k€ over 5 years (115 k€ per year). The PI of SOXS will evaluate the single requests and present them to the SOXS Board, who will review the application and balance it against existing science cases. Revision of GTO time shares[2] as a result of a new group becoming a full member will be subject to a cap (TBD) in order to adhere to the individual MoUs.

External co-investigators can be involved in single internal proposals under the supervision of the internal proposal PI. Applications for external co-investigators of single internal proposals will be presented by PI country members and approved by the SOXS Science Board. These external co-investigators cannot lead SOXS internal proposals but can act as Publication Leaders (see Section 6), under the internal proposal PI responsibility. The same external scientist can be on more than one SOXS internal proposals, but should have an application for each proposal.

In all cases, the SOXS Science Board has the right to refuse the collaboration of an external group. This is particularly true if we do not find an agreement in case of overlapping science themes.

[2] This is the sum of contribution to building the instrument (hardware + software) and operations (running the operational shifts) costs, evaluated in XXX M€.

4 Organisation of SOXS Science Working Groups

As was in the case for the building of the instrument, the scientific exploitation of SOXS data will require clear and solid Science Working Groups (WGs). We identify here a number of WG topics, which could be updated in the future, together with the selected WG leaders and a deputy.

WG #	WG Topic	WG Leader (Deputy)
1	Minor bodies and comets	Fitzsimmons (Dotto)
2	Stellar variability, exoplanets and Young Stellar Objects	Pagano (Alcalà)
3	Transient X-ray binaries, magnetars, ultra-luminous X-ray sources (NS & BH)	Casella (Veledina)
4	Cataclysmic variables, novæ & white dwarfs	Della Valle (Ben-Ami)
5	Supernovae Ia	Stritzinger (-)
6	Fast and extreme transients (incl. SLSN)	Arcavi (-)
7	Intermediate luminosity transients	Kotak (Pastorello)
8	Core Collapse Supernovae	Gal-Yam (Pignata)
9	AGN and blazars	Landoni (-)
10	Tidal Disruption Events and nuclear events	Mattila (Arcavi)
11	Gamma Ray bursts & Fast radio bursts	D'Avanzo (Fynbo)
12	Gravitational wave and neutrino counterparts	Campana (Smartt)
13	Classification	Benetti (Botticella)

WGs are envisioned to serve as a forum where scientists on any given topic can discuss observations, analysis and the writing of papers, in additional to determining to which topics SOXS Consortium should invest its resources. WG Leaders (and deputies) will coordinate the work within these science WGs. After consultancy with the Science Board the PI of SOXS will appoint the WG Leaders among Consortium members. WG Leaders and deputies are selected based on their scientific expertise. Their overall assignment does not need to fully represent the fund investments of SOXS Consortium members. WG Leaders are fixed-term positions and might change or be rotated as the project evolves on a yearly basis. WG Leaders will submit a yearly report to the SOXS Science Board. Contextually, the PI of SOXS, after consultancy with the Science Board, will appoint the WG Leaders and deputies for the following year.

To be part of a WG, SOXS Consortium members (see Section 3) should send an application to the WG Leader briefly stating their interests and capabilities. The PI of SOXS, after consultancy with the Science Board, will approve the final list. Being part of a WG does not guarantee any right to be an author of publications on this topic. Participation in the WGs is free but should be sought with wisdom.

Besides providing an opportunity to discuss within the Consortium of new ideas and projects, each WG will produce single non-overlapping internal proposals to be (later) included in the ESO-GTO proposals (see Section 5). These internal proposals are multi-year proposals to be carried out during the SOXS lifetime, led by a Principal Investigator and co-Investigators (not necessarily from a single institute) and not necessarily including the WG Leader. These proposals will be the backbone of SOXS science and will reflect the various WG science goals/objectives.

5 Organisation of SOXS Science Internal Proposals

SOXS science will be exploited by single Principal Investigator (PI) internal proposals.

Each internal proposal should identify important science cases to be pursued by SOXS. The internal proposal PI is then responsible for the exploitation of the SOXS observing time, materialised in papers, presentation to conferences, etc., following the publication policy (see Section 6). Scientists outside the Consortium can contribute to these proposals if their contribution is mandatory for the proposal, under the proposal PI supervision, and after approval of the Science Board (see Section 3.1). Science Working Groups (WG, see Section 4) are the natural place where to discuss and coordinate these proposals and projects. Internal proposals should state their scientific aims and provide well-defined triggering criteria and strict occurrence probabilities or number of targets to be observed.

The science cases of single PI internal proposals will then converge into four large (external) ESO Guarantee Time Proposals (ESO-GTO), organised into four main ESO-GTO proposals: Stellar variability, YSO and exoplanets (WG 1-2), compact objects in our Galaxy and beyond (WG 3-4), Supernova and related objects (WG 5-8), and Extragalactic variable sources (WG 9-12). The possibility of having Large Programs and/or 1yr proposals is being investigated with ESO.

Each institute will receive through the time assigned to each internal proposal a reward for the funds put into the projects up to instrument completion (then SOXS operations should be handled following the same shares). Shared PIship could also be envisaged. Proposals involving different WGs could also be envisaged, and discussed jointly in the relative WGs. Even if the proposals are expected to have a 5 yr horizon, their time-share budget will be revised every 12 months (TBD) together with the ESO-GTO proposals, in terms of continued scientific interest in the Consortium and proper use of the already assigned time (e.g. status of the analysis, published papers, etc.).

Possible conflicts in the assignment of an internal proposal PIship in case of multiple requests on the very same science topic will be discussed within the corresponding WG. In case of no agreement, two or more different proposals will be submitted to the Science Board.

The Science Board and the PI of SOXS will assign the SOXS observing time-based on the submitted internal proposals. The time-share of single internal proposals will be in (rough) proportion to the total funds invested by single institutes into the project up to starting of ESO-GTO observations. A shared-PI proposal will count based on the specified time-shares.

Given the input received the time-shares should be allocated as:

Institute	Approx. Time Share
INAF (Italia)	49%
Weizmann Institute (Israel)	24%
Queen's University Belfast (UK)	8%
Millennium Institute (Chile)	6%
FINCA (Finland)	7%
Tel Aviv University (Israel)	4%
DAWN (Denmark)	2%

The total amount of observing time for the SOXS Consortium is 180 nights per year for five years. The observing time to be dedicated to source classification from surveys (pending a sufficient number of targets for the science proposals) will be envisaged by the Science Board. Observing time dedicated to source classification is out of the time-share budget, unless otherwise requested. This might not be more than 25% of the Consortium time. A small amount of time (3%) will be kept under the PI of SOXS supervision for extraordinary and/or unknown events (e.g. Galactic supernova). If not used, this time will go into classification targets in the last month of each semester. As a safe rule it would be better to include in the ESO-GTO proposals these very rare events (a single sentence would be enough), even if not directly covered by an internal SOXS proposal.

6 SOXS publication policy

6.1 Introduction

These policies will apply to all papers submitted to refereed journals as well as conference proceedings. Brief and quick communication (GCN, ATel, etc.) will obey looser rules (see Section 6.4). All papers that include some SOXS spectroscopic or photometric data must abide by this policy.

A publication is considered a SOXS publication if the data are proprietary of the SOXS Consortium. More than one publication can derive from one single set of data under the SOXS aegis (if data are sufficiently rich). Data rights of the SOXS Consortium end when data are included in a published paper (see below).

6.2 The Publication Roadmap (SOXS papers)

SOXS publications will consist of quick, outstanding results, longer-term observational campaign, or analysis of samples of objects. Therefore, the publication strategy must combine flexibility and efficiency. There should be two different ways of publishing SOXS data. One is the most direct and concerns a direct publication of SOXS data. This is the subject of this section. Other papers can use SOXS data, when these data are not enough for a stand-alone publication. These papers will be described in Section 6.5.

When collected data and their interpretation has reached a sufficiently mature level that a publication can be foreseen, the following steps should be followed:

1. Normally data have been collected under a single PI proposal. The PI proposal identifies the Publication Leader (usually also the first author), who will be in charge of managing the publication.

- The Publication Leader should inform the SOXS Consortium of the start of a new publication by posting a title, a brief abstract, the lead author (i.e. the first author), and an indicative time needed to have it ready to submit on the SOXS wiki (or similar). This information is embargoed and should not be distributed outside the SOXS collaboration, unless with the specific agreement of the paper's Publication Leader.
- The Publication Leader should send by email the same information to the corresponding science WG members and to the SOXS Science Board.

2. We encourage that a skeleton of the paper (figures, conclusions and main results) is circulated within the relative science Working Group email lists well before the final draft is completed. This encourages collaboration and meaningful engagement by co-workers when there is still time left to shape the scientific content and direction of the paper. It is often

somewhat late to significantly contribute to a paper by the time a final draft is ready. Hence, we would like to encourage this as a good scientific practice and one that would enhance the scientific collaboration within the SOXS Consortium. The draft is embargoed.

3. When the paper draft is ready, it should be posted to the private area of the SOXS wiki. A message to the entire SOXS collaboration should be sent notifying everyone of the draft. The initial email should give details of the journal to be submitted to, detail the year(s) of SOXS data the publication is based on, and list any outstanding issues (e.g., authorship queries etc.). The message should also contain indications if the paper has to be considered a fast or normal publication (see point 4 below). The draft is embargoed.

4. We envisage two different reaction time-scales by the SOXS Consortium depending on the urgency of the publication and external competition:

- Fast: reaction time within 5 days
- Normal: reaction time within two weeks

The Publication Leader should propose for a "Fast paper" status to the PI of SOXS. Even faster reaction times (i.e. less than 5 days) will be equally managed by the PI of SOXS, upon request.

5. Everyone who is eligible for co-authorship on the paper (see Section 6.3) must state that they wish to be a co-author and, possibly, provide comments on the paper. The response time is fixed by the paper status at point 4, explicitly stated in the paper announcement email (point 3) to the SOXS Consortium. Any member of the SOXS Consortium can provide comments to the draft within the appropriate response time. It is up to the Publication Leader to decide if these comments were important enough to deserve authorship and in which position. In case of disputes, the WG leader and, in case the PI of SOXS and the Science Board will act as an internal referee.

6. After revision of the paper following comments, if the comments were minor it is up to the Publication Leader to decide whether a further iteration is required. For major comments or revisions, it is expected that co-authors would receive a second opportunity to view the paper prior to submission.

7. The paper is not considered public until the Publication Leader lifts its embargo. Until this embargo is lifted, the paper and its results cannot be quoted in public (e.g., in conference talks), referenced in other publications, etc. without the permission of the Publication Leader. The embargo is being lifted if:

- it is posted on arXiv
- the Publication Leader explicitly lifts the embargo (email to the Consortium)
- it is formally published

The timing of any arXiv posting is at the sole discretion of the Publication Leader.

8. Any referee's report and any revised version must be posted on the SOXS wiki, together with any reply to the referee, and a final link to the journal and/or arXiv version. The Publication Leader is in charge of these tasks.

9. There is a mild preference for publishing SOXS papers in Astronomy & Astrophysics, being the natural journal where ESO data are published.

6.3 Authorship of SOXS papers

The basic principle of the SOXS publication policy is "juste retour" for work done and for the funds invested by founding institutes. Time-shares among different science proposals already account (roughly) for funds remuneration. A Builder List will also convey the principle that who physically built the instrument, and whose effort was important to the overall success of the project will be offered the chance to sign some SOXS papers. Thus, the author list will normally

be made up of the relevant science proposal members and contributors, the SOXS Builders list, and members of the feeder surveys that provided the targets for paper in question, when needed.

1. Science Proposals: the Publication Leader is responsible for the author list. It is expected that authorship should be by merit and not in alphabetic order. It is expected that all co-Investigators of a science proposals sign the relevant papers. Authors outside the science proposal but, e.g., within the same Science Working Group can sign papers if their comments and contributions are judged valuable by the Publication Leader. People outside the SOXS Consortium and the submitted proposal co-investigator list can sign the paper if the Publication Lead judges their contribution mandatory, and after the approval of the PI of SOXS.
2. Observer list: SOXS duty scientists/data reducers/shift coordinators (a shift team is made by up to five scientists and works for an entire week, see Operations Science Document), are not entitled by right to be co-authors on all papers that use data from their particular observing runs. Such activities are viewed as necessary project work. However, there will be an Observer Status reward for observers who carry out significant amounts of shifts. Each observer will be entitled to authorship on one paper every observing run, above and beyond papers they would normally co-author within their science projects. The shift leader of the operation will gain one more paper every two shifts. The choice of the paper is up to each individual shift member, and it is their responsibility to contact the Publication Leader within 2 weeks (or shorter if it is a fast paper) of the paper being posted on the SOXS wiki, requesting co-authorship.
3. Feeder surveys and late-time observations: The feeder surveys from which SOXS takes its follow-up targets may also request co-authorship for some of their members. These will be detailed on a survey-by-survey basis, as agreements will be in place. On the other side, agreements for deep late-time observations with larger facilities can be set up. Other occasional collaborations providing SOXS with data to make stronger the publication fall also in this category. The responsibility to negotiate the publication terms is given to the Publication Leader.
4. Builders list: Scientists who have given a major contribution to the construction of the instrument, listed in the Builders List, shall be notified of all SOXS publications, and have the right to be listed as co-authors on a number of SOXS publications, depending on their contribution. The Builders List is determined by the Science Board at the end of the construction phase and will be fixed for the first 5 years of the SOXS operations. The Builder status can also be granted to people working to the SOXS infrastructure during the operational phase. A dedicated document will be prepared. As a general guideline: Work Package (WP) Leaders, Archive Lead, and Operation Lead 1/4 of the papers; Project Office (Principal Investigator, Project Manager, System Engineer, Instrument Scientist) 1/2 of the papers; other contributors to the building of SOXS 1/7 of the papers. These shares are calculated on top of the papers a builder would normally sign in based on their science interests
5. Therefore, a SOXS publication author list will consist of the science proposal team with the first author indicated by the Publication Leader. These will include also authors who provided sufficient scientific contribution to the paper itself. The Publication Leader decides the authors' list. Then in alphabetic order, the list of Observers who decided to sign that particular paper. Then, in alphabetic order Feeder survey scientists and other scientists who provided valuable data. Finally, in alphabetic order, the list of Builders who decided to sign that particular paper.

6. Authorship and publication disputes will be arbitrated by the PI of SOXS and the Science Board.
7. The PI of SOXS has the authority to declare outstanding papers as a "grand" SOXS paper, open to the entire collaboration and out of any computation. Publication Leader rules still apply on the first author selection and the first bunch of authors order. Then all the others in alphabetic order.
8. All SOXS papers should report in the acknowledgements section the statement "Based on observations collected at ESO under the SOXS GTO programme XXX" and should cite the reference SOXS paper(s).

6.4 Authorship of fast circulars based on SOXS data

Transient targets classified by SOXS will be announced issuing ATels (or similar) by all the team on shift. The shift leader will decide the authors' order. These circulars should be written on behalf of the SOXS collaboration, (e.g. "A. N. Others, on behalf of the SOXS collaboration").

In the case of circulars based on a fast reaction transient (e.g. GRB), the PI of the corresponding science proposal is responsible for the circular and authors' order. These circulars should also include the observer team on shift and the "on behalf of the SOXS collaboration" wording.

ATel/GCN guidelines will be found on the SOXS wiki.

6.5 Authorship of SOXS data in other papers

It might happen that SOXS data are not sufficient for a stand-alone publication, but can be instead used to make stronger other publications led by non-SOXS members. These are referred as lite SOXS papers. These can be identified as the overall scientific content would not significantly change with the exclusion of SOXS data. In this case, the proposal PI is in charge of the negotiations. The Science Board should be informed immediately. The minimum condition for the usage of SOXS data is to include at least 5 SOXS members: three from the internal proposal from which the data has been collected and two from the institutional channels (usually, the PI of SOXS and one member of the SOXS Science Board on rotation). Depending on the amount of involved data the PI of SOXS and Science board can ask the proposal PI to negotiate for more authors. These papers should still acknowledge ESO with the standard sentence "Partially based on observations collected at ESO under the SOXS GTO programme XXX" and should cite the reference SOXS paper(s).

6.6 Legacy and complete sample SOXS papers

Given the large amount of time dedicated to the SOXS GTO, legacy programs are welcome. We have to investigate with ESO if there is the possibility to submit Large Programs, or similar, for key science goals. In any case, SOXS Consortium data will become public in one year.

Abbreviations and Acronyms

AD	Applicable Document
ATel	Astronomical Telegram
ESO	European Southern Observatory
GCN	GRB Circular Network
GRB	Gamma-Ray Burst
GTO	Guarantee Time Observations
IS	Instrument Scientist
LPO	La Silla Paranal Observatory
MoU	Memorandum of Understanding
NIR	Near Infrared
PI	Principal Investigator
PM	Project Manager
RD	Reference Document
SE	System Engineer
SOXS	Son Of X-Shooter
STC	Scientific and Technical Committee (ESO governing body)
SV	Science Verification
TBC	To Be Confirmed
TBD	To Be Defined
UT	Unit Telescope (of the VLT)
WG	Working Group
WP	Work Package