



Stellar Observations Network Group

SONG Policies

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1 Introduction and SONG background

SONG is an abbreviation for Stellar Observations Network Group and was conceived initially around 2006 in Aarhus by Frank Grundahl and Hans Kjeldsen. The main idea behind SONG is to develop a global network of 1m-class telescopes to carry out detailed studies of solar-like stars using asteroseismology and to discover and characterise exo-planets and their star system. Based on funding from Danish sources the research groups at the Department of Physics and Astronomy, Aarhus University (AU) and the Niels Bohr Institute, Copenhagen University (KU) developed a prototype network *node* with dome, telescope instruments and semi-automated data-reduction. This is located at the Observatorio del Teide (OT) in Tenerife and has been established through a close collaboration with the Instituto de Astrofísica de Canarias (IAC). This node was officially inaugurated on the 25th of October 2014. A second node at the Delingha Observatory in China, funded by National Astronomical Observatories China (NAOC) is constructed. This node has a similar spectrograph to the one at OT and has proved to produce equally good data in manual operational mode.

1.1 SONG goals

The scientific goals for SONG are to:

- study stars at a level of detail similar to what can be obtained for the Sun with integrated disk observations. This is primarily done through asteroseismic studies of these stars.
- search for and characterise planets in orbit around other stars than the Sun.
- do time domain astronomy using the SONG instruments.

At the outset of the SONG work this was understood to mean long-term programmes with high cadence spectroscopic observations (for precision radial velocities) and photometry in crowded fields of the galactic bulge to observe gravitational microlensing events. To reach these goals we aim for the construction of a network consisting of 8 'identical' telescope nodes. From the scientific point of view the network is considered as a single instrument.

2 The SONG Network

2.1 SONG Network Structure

The SONG network will be operated through the SONG **Steering Committee (SSC)**, a committee formed of representatives from all partner institutions (see section 2.3.1 for details on partners) to govern the construction and operation of the network, to appoint the **SONG project scientist** and the **SONG manager (the SONG management team)** and to set the rules and regulations under which the network will operate (see Fig. 1). The SSC will also appoint the **SONG science manager**.

The SSC will communicate with the SONG management team who oversees the network. In addition to his or her operational duties, the SONG manager will communicate with the technical support, which includes telescope operation, telescope instrumentation, software and hardware. The scientific programmes to be observed will be prioritised by the **Time Allocation Committee (TAC)**, which will be organised and chaired by the SONG science manager, but approved by the SONG project scientist. Further, each node should appoint a **node responsible**, who will directly interact with the SONG manager, coordinate the construction and is responsible for the node maintenance.

The telescope operations of the entire network will be coordinated and led by the SONG manager, who also oversees the software development necessary for data acquisition and daily operational aspects (e.g. maintenance, etc). The SONG manager is responsible for the SONG telescopes to produce raw data products (see section 4.5) on a daily basis.

The SONG project scientist is responsible for the development and design of new instruments and for all the spectroscopic data products to be of optimum quality and to make sure the data are available for the SONG users.

The SONG science manager will organise the call for proposals, chair and coordinate the TAC and communicate with the SONG project scientist as well as the PIs of the science projects.

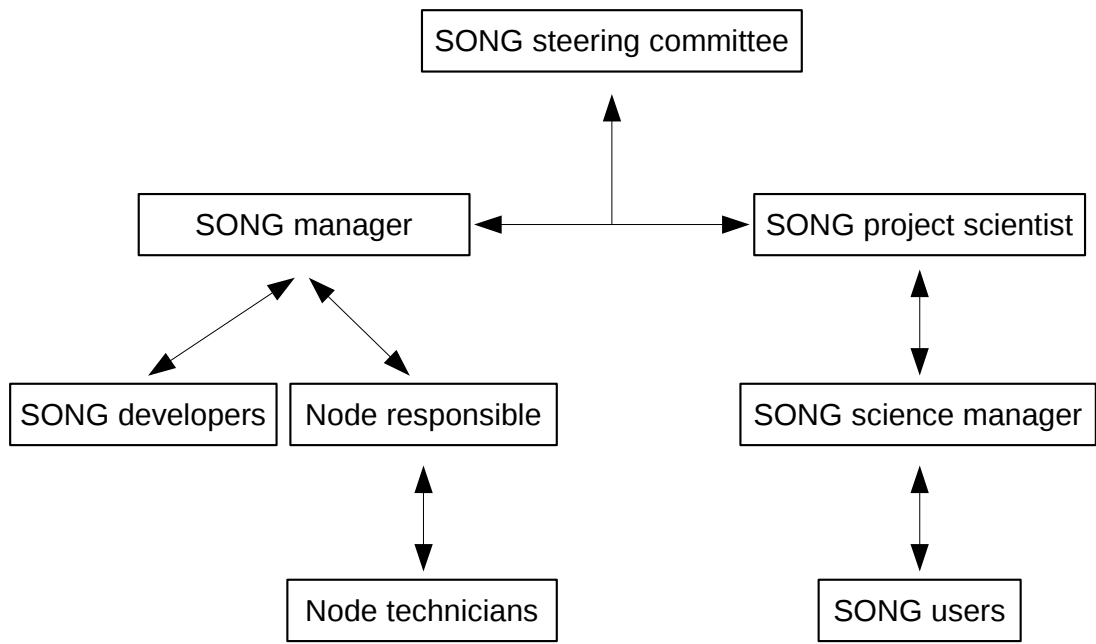
Financial matters for running the SONG Network as a whole will be handled by the SSC. Each node will be responsible organising financial support for building the telescope, instrumentation, maintenance, etc on its own.

SONG developers have specific tasks regarding software development, software maintenance and network setup and will coordinate their work with the SONG manager.

2.2 SONG Steering Committee

The SONG Steering Committee (SSC) is the committee consisting of all network partners, setting the rules and regulations after which the SONG network will be operated and also oversees the financial matters to run SONG as **one network**. Each partner appoints a member to be part of the SSC. The SSC will meet (possibly by telecon) whenever it is required. The structure and composition of the SSC is listed in Annex B.

Potential partners can be invited to become SSC members with observer status, i.e., they have no decision power in matters related to SONG.



Responsibilities

SONG steering committee	<ul style="list-style-type: none"> • Financial matters • Policies
SONG project scientist	<ul style="list-style-type: none"> • Instrument design • Data quality assesment • Data availability
SONG manager	<ul style="list-style-type: none"> • Daily operations including software and hardware of the entire network • Software development and integration • Maintenance coordination
SONG science manager	<ul style="list-style-type: none"> • TAC coordination • Science management
Node responsible	<ul style="list-style-type: none"> • Local on site maintenance • Site coordination • Communication with the SONG manager
SONG developers	<ul style="list-style-type: none"> • Software development • Database and network setup
Node technicians	<ul style="list-style-type: none"> • On site regular maintenance

Figure 1: SONG structure and responsibilities.

2.3 SONG membership

2.3.1 SONG Partners

A partner is defined by the amount of contributions made to the network. These can either be the provision of a telescope site or of funding/manpower/infrastructure equivalent to at least 30% of one node, but ultimately decided by the SSC. Each partner agrees to share 100% of the observing time with the entire network and the SONG community. The current SONG partners are described in Annex A.

2.3.2 SONG Collaborators

A collaborator is part of the SONG collaboration and has the right to apply for observing time and will have access to the data products following the data policy described in section 4. Scientists affiliated to the research groups listed in Annex C or explicitly identified by the heads of the groups can become a SONG collaborator.

2.4 SONG Time Allocation Committee

The Time Allocation Committee (TAC) will prioritise the scientific programmes to be observed with the SONG network and will advise the SONG management team in the selection process.

The SONG science manager will chair the TAC, organise the meetings and will inform the applicants (project PIs) about the outcome of their proposals. The SONG management team will participate in the TAC meetings, offering technical support on the feasibility of the projects. Projects fulfilling one or more of the main goals of SONG will be prioritised (see section 1.1).

Each partner of SONG (Annex A) will appoint a representative to be member of the TAC. At least one additional member of the TAC will be an external member without direct connection to any SONG partner. Current TAC members are listed in Annex F.

3 Applying for time on SONG

3.1 Who can apply?

The SONG network is not open to the entire astronomical community. Observing proposals submitted to SONG need to be led by a SONG collaborator. It is also expected that the science will be carried out predominantly by SONG collaborators. Co-Investigators (Co-I) who are not part of the SONG collaboration (see section 2.3.2) are allowed to be on the proposal, if the PI finds it relevant. On a given proposal the majority of all Co-Is are expected to be SONG collaborators.

3.2 Time allocation policy

The TAC will rank SONG observing proposals prioritising the SONG goals (see section 1.1). The decision will be based on scientific merit, but ultimately the TAC will take into account the SONG policies decided by the SSC. The SONG

project scientist will allocate the SONG observing time based on the prioritised list of proposals delivered by the TAC.

3.3 SONG Discretionary Time

SONG discretionary time allows for observations of high impact science proposals, without waiting for the next application period. The SONG management team will get the application and take the decision together with the SONG science manager based on the scientific merit and the impact on the projects allocated by the SONG TAC.

3.4 Proposer responsibilities

For each accepted observing programme the PI must ensure that manpower for regular follow-up/monitoring of the observing progress during programme execution is available. This should include monitoring of data quality with several checks per week for long-running observing programmes.

4 Data and Publication policy

4.1 Proprietary period and public data

Data obtained for approved SONG projects shall remain proprietary to the PI for a period from zero to maximum one year. However in order to maximise the use of SONG data we encourage PIs to keep the proprietary time as short as possible. The one-year period starts at the end of each observing period. Following the expiration of this period, the data will become public and accessible through the SONG Data Archive (SODA) to all SODA members. Proposals extended over several periods will have the proprietary time adjusted accordingly. The proprietary period may be extended or reduced in exceptional circumstances on request, at the SONG science manager's discretion (e.g. PhD projects). Data will be released and made public at the time of publication of results based on the data (including publication on arXiv), even if this is before the original proprietary period. The SONG project scientist and SONG science manager are responsible to enforce the data release. PIs will be able to adjust the proprietary time of each proposal via SODA.

SODA members work under a data policy defined to be consistent with the general policy for the SONG nodes, as overseen by the SSC. If a person cannot accept the policy or fails to comply with it, the SSC can take action to cancel the SODA membership for that person.

SODA is open to the entire astronomical community and all SODA members have unrestricted access to all available data products after the proprietary period of 12 months. Access is password controlled and data downloads are logged.

4.2 The SONG publication review panel

Each SONG publication must be submitted through a dedicated web form on the SODA web page to be evaluated by the SONG publication review panel. The panel will as a minimum consist of:

- *Each SSC member*
- *Each SONG node responsible*
- *The SONG project scientist*
- *The SONG manager*
- *The SONG science manager*

The current members are listed in Annex D.

4.3 Publication policies

It is in the interest of the SONG network as a whole as well as for each individual research scientists within the SONG community that publications are accurate, that credit is fair to the authors and other contributors and that the data and the science results should be provided to the scientific community and the public in a timely fashion.

4.3.1 General publication policies

All publications which include SONG observations must contain a footnote or an acknowledgement shown in Annex E. The text will change accordingly as more nodes joins the SONG network.

4.3.2 Proprietary data - publication policies

Any publication where access to proprietary SONG data, or unpublished results therefrom, has been used has to fulfill the following policies before submission to a journal.

1. Any community member who contribute to a given data set (analysis, target selection, etc.) shall be offered authorship on publications related to that given data set.
2. Any publication that will be submitted must be checked and formally approved before submission by the SONG publication review panel, who have the right to modify the list of authors to make it conform with the data- and publication-policies described in this document. Prior notification to the SONG management team and/or the science manager is also expected for press releases.
3. Any paper in a near to final state and ready for review will be uploaded through SODA to enter the SONG review procedure which will at maximum take one week. The paper will only be visible to the panel members during the review process. The SONG publication review panel will *only* check author list, acknowledgements and the technical description of the SONG telescope and instruments and will define whether a given paper, based on the SONG data contribution, is a:

- **Key publication**

All *SONG team members* (see Annex G) should be offered co-authorship. Each 'node responsible' is responsible for keeping a list of relevant SONG team members on that specific node.

Key publications are required to include an additional acknowledgement which is shown in Annex E.

- **Normal publication**

Co-authorship is offered to the node responsible from the SONG node(s) where data have been collected and to the SONG team members who have made a substantial contribution to the collection of data used in the specific paper. The review panel might also select other relevant SONG team members who should be offered co-authorship.

- **Minor SONG contribution publication**

The author will be asked to consider relevant SONG team members as co-authors but it is not a requirement.

The review panel will reply to the PI with a list of requested/suggested co-authors defined by the decision on the paper type. Any discussion amongst the reviewers will happen through an e-mail correspondence by replying to all on the review panel mailing list.

4. Any SONG team member offered co-authorship on a publication has to actively accept/decline the offer by replying yes/no to the PI or first author of the given paper.

The following set of guidelines needs to be followed when authorship is decided for a given paper. Any dispute will be decided by the SSC.

1. The primary author (the person who is doing the major part of the work) of each SONG publication shall be listed first in the authorship list.
2. The first (primary) author decides the order of the co-authors including the SONG team members who accepted co-authorship.
3. Any person who writes or contributes substantially to any part of the publication shall be included in the authorship list, if that person so chooses.
4. Everyone who is listed as an author of a given paper is expected to read a draft version of that paper, and inform in a timely manner the first author of agreement with the paper and provide suggestions for improvement if any.

4.3.3 Public data - publication guidelines

1. Any publication including public SONG data which is ready for submission should be uploaded through SODA to the SONG publication review panel. The panel will check the acknowledgements, technical description of the SONG instruments and might provide the PI with a list of members from the SONG team to consider for co-authorship.
2. Any SONG team member offered co-authorship on a publication has to actively accept/decline the offer by replying yes/no to the PI or first author of the given paper.

4.4 Special policies for (PhD) students

If a given data set is part of a (PhD) student's project the proprietary time of one year can be extended. This has to be stated clearly in the proposal and will ultimately be decided by the SONG science manager.

4.5 Data products

The current SONG data products are:

- Extracted 1D spectra
- Radial velocities from iodine observations
- Raw 2D spectra and calibration files

The list will increase when additional instruments becomes available.

4.6 Data delivery

The iodine radial velocity data will be delivered to the proposal PI after the observing run has been completed or on request by the PI given to the SONG project scientist. Access to extracted data is available on SODA within a few working days, however reduced data need processing time.

5 Quality evaluation

While the observing programmes allocated by the SONG TAC is ongoing the data quality will be assessed by the SONG project scientist and/or the PI or a designated CoI. This assessment should be carried out on a regular bases. If the data are of bad or questionable quality the SONG project scientist will consult with the SONG manager to find a solution.

6 Observing Time Application Procedures

6.1 Call for observing proposals

Proposals for observations with SONG are invited **twice a year**. A Call for Proposals will be send out at the latest two months in advance before the observing period starts (example: for observations to be carried out between October 1 of the current year and March 31 of the following year the call will be sent out at the latest at the end of August in the current year). Proposals must be submitted before the respective deadline using the dedicated web form on SODA and following the instructions given in the Call for Proposals. The latest call can be found on SODA. The Call for Proposals also gives an overview of the instruments that can be applied for, as well as of the most important policies and procedures. The proposals are reviewed by the Time Allocation Committee (TAC). The TAC evaluates the scientific merits of the proposals, which are the basis for final decision on the telescope time allocation. The outcome of this process is communicated to the proposers at the latest two weeks before the observing period stars. Information about successful proposals will be published on SODA.

6.2 Proposal: how to?

The proposal will consist of two phases, with the deadlines specified in the Call for Proposals. A link to the web form in SODA will be provided with each Call for Proposals and only proposals submitted through the web form will be accepted.

6.2.1 Phase 1

Phase 1 will consist of a proposal to assess the feasibility of the science case. This will also serve the TAC to make a decision upon allocation time. Submission of the Phase 1 proposal will happen through a web form on SODA.

6.2.2 Phase 2

Phase 2 will be open only to applications successful in Phase 1 and will consist of web-based forms on SODA collecting informations such as targets to observe (object name, V -magnitude, α , δ , etc), exposure times, observational setup and other relevant information.

6.3 Contact

Each proposal needs to designate a contact person (a SSC member).

Annexes

Updated: August, 2019

A SONG Partners

Aarhus University

Copenhagen University

Instituto de Astrofísica de Canarias

National Astronomical Observatories, China

Joint Australian collaboration¹, Australia

B SONG Steering Committee (SSC) members

Joining SONG nodes will contribute to the SSC with an additional member.

Aarhus University, Denmark (Jørgen Christensen–Dalsgaard)

Copenhagen University, Denmark (Uffe Gråe Jørgensen)

Instituto de Astrofísica de Canarias, Spain (Pere L. Pallé)

National Astronomical Observatories, China (Licai Deng)

Joint Australian collaboration¹ (Rob Wittenmeyer & Tim Bedding)

Observer: University of Hawaii at Manoa (Daniel Huber)

Observer: Space Science Institute, Boulder (Travis Metcalfe)

C Head of groups

Head of groups defining who are allowed to apply for SONG time.

Stellar Astrophysics Centre at Aarhus University (head: Jørgen Christensen–Dalsgaard)

Copenhagen University (head of group: Uffe Gråe Jørgensen)

Instituto de Astrofísica de Canarias (head of group: Pere L. Pallé)

National Astronomical Observatories, China (head of group: Licai Deng)

Joint Australian collaboration¹ (heads of group: Rob Wittenmeyer & Tim Bedding)

¹University of Southern Queensland, University of Sydney, University of New South Wales, Monash University and Australian National University

D SONG publication review panel members

Joining SONG nodes will contribute to the panel with an additional member.

SONG PI: Jørgen Christensen–Dalsgaard

SONG partner: Uffe Gråe Jørgensen

SONG partner: Pere L. Pallé

SONG partner: Licai Deng

SONG project scientist: Frank Grundahl

SONG manager: Mads Fredslund Andersen

SONG science manager: Victoria Antoci

SONG financial responsible: Hans Kjeldsen

E Acknowledgement/footnote

If all data used were obtained with the **Tenerife** node:

‘Based on observations made with the Hertzprung SONG telescope operated on the Spanish Observatorio del Teide on the island of Tenerife by the Aarhus and Copenhagen Universities and by the Instituto de Astrofísica de Canarias.’

If data from the **Tenerife** and the **Delingha** node were used:

‘Based on observations made with the SONG telescopes operated on the Spanish Observatorio del Teide (Tenerife) and at the Chinese Delingha Observatory (Qinghai) by the Aarhus and Copenhagen Universities, by the Instituto de Astrofísica de Canarias and by the National Astronomical Observatories of China.’

An additional acknowledgement is required for "**Key publications**":

‘Support for the construction and maintenance of the Hertzprung SONG Telescope from the Instituto de Astrofísica de Canarias, the Villum Foundation, the Carlsberg Foundation, the Independent Research Fund Denmark and the operator and maintenance teams of the Observatorio del Teide is gratefully acknowledged.’

F Time Allocation Committee (TAC) members

Joining SONG nodes will contribute to the TAC with an additional member.

Chair of TAC: Sergio Simon Diaz

AU: Hans Kjeldsen

KU: Heidi Helena Korhonen

IAC: Nria Casasayas Barris

China: Chunguang Zhang

Australia: Christoph Bergmann

External: Orlagh Creevey (OCA)

SONG manager: Mads Fredslund Andersen (observer)

SONG project scientist: Frank Grundahl (observer)

G SONG team members

Current SONG team members:

SONG PI & head of SSC: Jrger Christensen–Dalsgaard

SONG partner: Uffe Gre Jrgensen

SONG partner & node responsible, Tenerife: Pere L. Pall

SONG partner & node responsible, Delingha: Licai Deng

SONG partner & node responsible, Australia: Rob Wittenmeyer

SONG SSC member, Australia: Tim Bedding

SONG project scientist: Frank Grundahl

SONG manager: Mads Fredslund Andersen

SONG Chair of TAC: Sergio Simon Diaz

SONG financial responsible: Hans Kjeldsen

SONG scientist: Sren Frandsen

SONG developer: Eric Weiss

SODA software developer: Rasmus Handberg

SONG developer: Anton Norup Srensen

SONG software developer: Jens Jessen-Hansen