

SOHO

Guest Investigator Programme Announcement of Opportunity

January 2002

**SOHO GUEST INVESTIGATOR PROGRAMME
ANNOUNCEMENT OF OPPORTUNITY
EXECUTIVE SUMMARY**

Contents: This AO invites proposals for Guest Investigations requiring new SOHO observations, analysis of existing data, or theoretical analysis in relation to SOHO observations. Format and submission are similar to those required for other Solar Physics programs. U.S. proposers should follow the format and other directions in a NASA Research Announcement, *The Sun-Earth-Connection Guest Investigator Program* (NRA 02-OSS-01).

Timetable: A yearly AO is foreseen, with the following timetable for this (fifth) round.

28 January 2002	Issue of Announcement of Opportunity
15 March 2002	Letter of Intent Due
17 May 2002	Proposals Due
September 2002	GI Selection Announced

Guest Investigations of up to 3 years duration will be considered.

Evaluation and Funding: Recommendations for selection of GI proposals will be made by the SOHO Guest Investigator Selection Committee (GISC) whose members are appointed by ESA and NASA. Proposals will be evaluated according to their overall scientific merit, relevance to the SOHO mission, compatibility with declared SOHO PI team objectives, and feasibility. U.S. Guest Investigator proposals funded by NASA will be selected by an appropriate designated official within the NASA Office of Space Science. Non-U.S. proposals will be selected by ESA's Director of Science.

Non-U.S. GIs will have to obtain funding for their research from their national or other international institutions.

For further information and/or clarifications please contact:

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Reference Documents

ESA/NASA STSP AO, ESA SCI(87)1, 1987
 The SOHO Mission: *Solar Physics*, Vol 162, No. 1-2, 1995
 The First Results from SOHO (Part I): *Solar Physics*, Vol 170, No. 1, 1997
 The First Results from SOHO (Part II): *Solar Physics*, Vol 175, No. 2, 1997
 SOHO Science Operations Plan (<http://soho.nascom.nasa.gov/publications/soho-documents/>)

List of Acronyms

CDS	Coronal Diagnostic Spectrometer
CELIAS	Charge, ELEMENT and Isotope Analysis
CEPAC	COSTEP – ERNE Particle Analyser Collaboration
COSTEP	Comprehensive Suprathermal and Energetic Particle Analyzer
CV	Curriculum Vitae
Co-I	Co-Investigator
EIT	Extreme-ultraviolet Imaging Telescope
EOF	Experimenter Operations Facility
ERNE	Energetic and Relativistic Nuclei and Electron experiment
ESA	European Space Agency
FITS	Flexible Image Transport System
GI	Guest Investigator
GISC	Guest Investigator Selection Committee — ESA/NASA
GOLF	Global Oscillations at Low Frequency
GSFC	Goddard Space Flight Center
IDL	Interactive Data Language
LASCO	Large Angle Spectroscopic COronagraph
MDI	Michelson Doppler Imager
NASA	National Aeronautics and Space Administration
NRA	NASA Research Announcement
PI	Principal Investigator
POCC	Payload Operations Control Center
PSO	Project Scientist Office
SOHO	Solar and Heliospheric Observatory
SOI	Solar Oscillations Investigation
STSP	Solar Terrestrial Science Programme
SSWG	Solar System Working Group (ESA)
SUMER	Solar Ultraviolet Measurements of Emitted Radiation
SWAN	Solar Wind ANisotropies
SWT	Science Working Team
UVCS	UltraViolet Coronagraph Spectrometer
VIRGO	Variability of solar IRradiance and Gravity Oscillations

1 Mission Overview

The Solar and Heliospheric Observatory (SOHO) mission has been developed by ESA and NASA as part of the Solar Terrestrial Science Programme (STSP). This Programme consists of a pair of missions known as CLUSTER (Study in Three Dimensions of Plasma Turbulence and Small Scale Structure) and SOHO. STSP is part of the larger International Solar Terrestrial Physics Programme (ISTP). The scientific objectives of STSP and ISTP are to study solar and heliospheric processes which generate and transmit energy from the Sun through interplanetary space and the physics in three dimensions of small-scale plasma structures in key regions of geospace. SOHO focuses on the study of physical processes in the solar corona and the resulting solar wind, as well as the structure of the solar interior and the variability of the solar irradiance. SOHO was launched on 2 December 1995 and nominal operations in the halo orbit around the L1 Sun-Earth Lagrangian point started in April 1996.

The investigations on-board SOHO are listed in Table 1. They can be divided by their area of research into three main groups: helioseismology, solar atmospheric remote sensing, and “in situ” particle measurements.

The SOHO Experiment Operations Facility (EOF), located at NASA Goddard Space Flight Center (GSFC), serves as the focal point for mission science planning and instrument operations. At the EOF, experiment PI representatives receive real-time and playback flight telemetry data, process these data to determine instrument commands, and send commands to their instruments, both in near real-time and on a delayed execution basis. They perform data reduction and analysis, and have capabilities for data storage. The EOF is also the prime center for inter-instrument data analysis, and the organisation and implementation of observing campaigns in collaboration with other spacecraft and ground based observatories.

To facilitate the intercomparison of experiment data and campaign data, an integrated SOHO archive, including software for user-friendly access, data retrieval and display, is located at the EOF.

The SOHO data are accessible at the SOHO Data Archive at the EOF¹. A Web interface is the user front-end to the archive, which provides also access to instrument specific software for reduce and analyze the data. All images are formatted in FITS. Two copies of the SOHO archive are accessible in Europe, one at the Institut d’Astrophysique Spatiale², France, and one at the Rutherford Appleton Laboratory³, UK. A third copy will be accessible soon at the University of Torino, Italy.

Many experiment teams have both permanent and temporary representatives on a rotating schedule present at the EOF.

Selected GIs will be welcome and encouraged to visit the EOF to acquire their data, and/or to perform (part of) their analysis in collaboration with the resident members of the SOHO PI teams.

¹<http://soho.nascom.nasa.gov/data/>

²<http://www.medoc-ias.u-psud.fr/archive/>

³<http://trace.solararchive.rl.ac.uk/soho/>

Table 1: SOHO Payload

Investigation	PI	Measurements	Technique
HELIOSEISMOLOGY			
GOLF	A.Gabriel, IAS, Orsay, F	Global Sun velocity and magnetic field oscillations Harmonic degree $\ell=0-3$	Na-vapour resonant scattering cell, Doppler shift and circular polarization
VIRGO	C.Fröhlich, PMOD/WRC, Davos, CH	Low degree ($\ell=0-7$) irradiance oscillations and solar constant	Global Sun and low resolution (12 pixels) imaging, active cavity radiometers
SOI/MDI	P.Scherrer, Stanford Univ., Calif.	Velocity oscillations with harmonic degree up to 4500	Doppler shift and magnetic field observed with Michelson Doppler Imager
SOLAR ATMOSPHERE REMOTE SENSING			
SUMER	K.Wilhelm, MPAE, Lindau, D	Plasma flow characteristics (T, density, velocity) chrom. through corona	Normal incidence spectrometer, 50-160 nm spectral resolution 20000-40000, angular res. 1.2-1.5"
CDS	R.Harrison, RAL, Chilton, UK	Temperature and density: transition region and corona	Normal and grazing incidence spectrometers, 15-80 nm, spectr. res. 1000-10000 angular res. 2"
EIT	J.P.Delaboudinière IAS, Orsay, F	Evolution of chromospheric and coronal structures	Images (1024 x 1024 pixels in 42' x 42') at lines of He I, Fe IX, Fe XII and Fe XV
UVCS	J.Kohl, SAO, Cambridge, Mass.	Electron and ion temp. densities, velocities in corona (1.3-10 R_{\odot})	Profiles and/or intensity of several spectral EUV lines between 1.3 and 10 R_{\odot}
LASCO	R. Howard, NRL, Washington, DC	Structures evolution, mass, momentum and energy trans. in corona (2-30 R_{\odot})	2 externally occulted coronagraphs
SWAN	J.L.Bertaux, SA, Verrières-le-Buisson, F	Solar wind mass flux anisotropies. Temporal variations	Scanning telescopes with hydrogen absorption cell for Ly- α light
SOLAR WIND 'IN SITU'			
CELIAS	D.Hovestadt, MPE, Garching, D	Energy distribution and composition (mass, charge and charge state) ions 0.1- 1000 keV/e	Electrostatic deflection, time-of-flight measurements and solid state detectors
COSTEP	H.Kunow, Univ. of Kiel, D	Energy distribution and composition of ions (p, He) 0.04-53 MeV/n and electrons 0.04-5 MeV	Solid state and plastic scintillator detector telescopes
ERNE	J.Torsti, Univ. of Turku, SF	Energy distribution and composition of ions (p, Ni) 1.4-540 MeV/n and electrons 1-25 MeV	Solid state and scintillator crystal detector telescopes

2 SOHO Guest Investigator Programme

This section describes the procedure for non-U.S. investigators for submitting a SOHO Guest Investigator Proposal and the required format and contents of the documents to be submitted. U.S. proposers should follow the format and other directions in a NASA Research Announcement, *The Sun-Earth-Connection Guest Investigator Program* (NRA 02-OSS-01).

2.1 Timetable

The following is the timetable for this (fifth) round of SOHO Guest Investigator Proposals.

28 January 2002	Issue of Announcement of Opportunity
15 March 2002	Letter of Intent Due
17 May 2002	Proposals Due
September 2002	GI Selection Announced

Guest Investigations of up to 3 years duration will be considered.

2.2 Letter of Intent

A *Letter of Intent* from prospective SOHO GIs is due at the Project Scientist at 15 March 2002. (Mailing addresses, telephone numbers, etc. are given under “Further Information”). A fax copy of the letter, received before the deadline, followed by the original letter will be acceptable.

The letter of intent should be concise (not more than two pages) and list the following information:

- A descriptive title for the proposal (an abstract is not required).
- Name, affiliation, mailing address, and (where applicable) telephone, fax, and e-mail of the prospective GI.
- Names and affiliations of Co-Investigators for the Guest Investigation.
- The SOHO PI team(s) with which the GI would like to work.
- A general description of the SOHO data sets needed or to be acquired, or the identification “theoretical research”.
- Intended source for funding.

2.3 Contact with PI Teams

Prospective Guest Investigators are strongly encouraged to contact the relevant PI team(s) in an early stage of the preparation of the proposal. In particular the feasibility of the proposed observations needs to be clarified. Are they technically possible, and can they be carried out within the observing capabilities of the SOHO mission?

2.4 Proposal

10 copies of the proposal have to be received by the Project Scientist by close of business on 17 May 2002. The page limit, including references and figures, is 17 pages: 1 cover page, 1 page for the abstract, 10 pages for the science and observing plan, 2 pages for the management and work plan, 2 pages for curriculum vitae (CV) and publications, and a 1 page budget summary. Proposals exceeding this requirement will not be considered.

2.4.1 Cover Page

The cover page of the GI proposal shall contain the following information

- The header: “Proposal for the SOHO Guest Investigator Programme”.
- The date of submission.
- A descriptive title.
- Name, affiliation, mailing address, and (where applicable) telephone, fax, and e-mail of the prospective GI.
- Names and affiliations of Co-Investigators.
- The SOHO PI team to which the GI would like to be attached.
- Total funding requested (and currency), and the intended source for funding.

2.4.2 Abstract

The second page of the proposal shall consist of an abstract of 200-300 words (keywords are optional), and a separate, brief (≤ 100 words) description of the datasets required and/or observation sequences proposed, or, for theoretical research, a description of the types of data to be considered.

2.4.3 Science and Observing Plan

The next section of the proposal shall contain the *Science and Observing Plan*. This section, including figures and references, shall not exceed 10 pages.

The organisation and focus of a scientific proposal are of course strongly dependent upon the type of research proposed: A purely theoretical proposal requires a different setup than a proposal for a specific observing sequence, or one for statistical analysis of a large set of existing data. Nevertheless the following requirements have to be satisfied for all proposals:

- The goal and relevance of the proposed investigation must be clearly identified
- The scientific background and context of the proposed research need to be succinctly described

- The main body of the *Science and Observing Plan* is to be a detailed description of work proposed to be undertaken, including a discussion of the expected results and their significance.
- If existing SOHO data sets are needed to perform the investigation, they shall be identified and reference shall be made to the relevant catalogue information.
- If new observations by one or more SOHO experiments are proposed, they have to be described in detail and checked for feasibility.

Figures, and also photographic images, can be part of the proposal, but videos will not be accepted. For references the use of one of the major journal formats (e.g. *Ap.J.*, *A&A*, or *Solar Phys.*) is recommended. The *Science and Observing Plan* should be a self-contained document: The use of attachments, for example in the form of papers in press, is not recommended. In any case the limit of 10 pages includes any attachments or appendices.

2.4.4 Management and Work Plan

A *Management and Work Plan* not to exceed two pages must be part of the proposal. The plan shall describe the division of tasks between the GI and his or her Co-Is, the locations where the work is to be performed, and the manner of coordination by the Guest Investigator. It must include a timetable for the completion of the elements of the work, and, if deemed necessary by the SOHO PI, indicate the availability of GI team personnel to support the observations at the EOF. The *Management and Work Plan* shall further demonstrate the availability of the needed computing resources at the proposed work locations.

2.4.5 Curriculum Vitae (CV) and Publications

The proposal shall contain a brief CV and list of relevant publications for the proposed GI, with a combined maximum of one page. If applicable, a second page with short biographical information and a small number of representative publications for the proposed Co-Is may be added.

2.4.6 Budget Summary

The proposers must include a one page budget summary identifying the external resources requested for their investigation, and the intended source of funding. The budget summary shall identify, if applicable, the requested salary support per investigator, and amounts for capital equipment, publication costs, and secretarial support. Further identifiable items are, if applicable, travel expenses, student support, and overhead.

2.5 Evaluation Criteria

The proposals will be evaluated according to the following criteria:

- Overall scientific and technical merit of the proposal.
- Relevance to the SOHO mission.
- Feasibility within the constraints of time, budget, computer power, SOHO capabilities, requirements of other PI team programmes, and the offerer's capabilities.

2.6 Selection and Funding

A Guest Investigator Selection Committee (GISC) will be appointed by ESA and NASA after recommendation by the SOHO SWT, ESA's SSWG, and its NASA equivalent. The GISC will rate the GI proposals according to the evaluation criteria, produce a referee report for each proposal, and rank the proposals in order of quality.

The U.S. proposals, with the referee report and the absolute ratings will be forwarded to the appropriate designated official within the NASA Office of Space Science for consideration of funding.

Non-U.S. proposals that meet an absolute quality standard to be determined by the GISC will be selected by ESA's Director of Science. The referee report, the absolute rating of the proposal according to the criteria, and the notification of selection or rejection, will be forwarded to the GIs by approximately September 2002.

Selected non-U.S. GIs can forward their proposals and their GISC evaluations to their national, or to international agencies for funding.

2.7 Implementation

After selection of their proposal, approved GIs will be assigned a point of contact within the relevant SOHO PI team(s), who will work with the GI until completion of the investigation.

In case of accepted Guest Investigations that do not require new SOHO observations, or have to secure additional funding, the starting date of the investigation can be moved forward in consultation with the Project Scientist and the relevant SOHO PI Teams.

Guest Investigations of up to 3 years duration will be considered. A final report on the guest investigation is due within one month after the end of the investigation period. The final report shall briefly summarize the main results and list all publications resulting, or partially resulting, from the guest investigation, and have copies of these publications attached. After the final report has been submitted, the GI will provide the relevant SOHO PIs and the Project Scientist with copies of any further publications resulting from the guest investigation.

2.8 Further Information

Prospective GIs are encouraged to contact the appropriate SOHO PI Teams in an early stage of their proposal. General information about SOHO, and about the GI Programme can also be obtained from the Project Scientist.

2.8.1 Contacting the EOF

Mailing address for proposals:

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EOF telephone numbers & principal points of contact:

Project Scientist's Office	301 - 286 - 2455
EOF Fax	301 - 286 - 0218
CDS Office	301 - 286 - 9053
SUMER Office	301 - 286 - 9048
EIT Office	301 - 286 - 9039
LASCO Office	301 - 286 - 2941
UVCS Office	301 - 286 - 3054
MDI Office	301 - 286 - 9054

2.8.2 PI Home Institutions

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