

ENEAS: the European Network of Excellence in AsteroSeismology

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<http://www.eneas.info>

Abstract

In this contribution we briefly introduce the history of the European Network of Excellence in AsteroSeismology, its goals and some concrete action items that have been defined. We invite all interested scientists to take part in our initiative, to make use of the facilities of the network and to propose suggestions for its future activities and structure.

History and Goal of ENEAS

The **E**uropean **N**etwork of **E**xcellence in **A**stero**S**eismology (ENEAS) was created on 11 October 2002 during a kick-off meeting held in Leuven (Belgium). This kick-off meeting was the result of the need felt by several astronomers in leading institutes in asteroseismology to develop an efficient exchange programme and to create closer collaborations across Europe in this research field. This need became evident during the numerous meetings of the European consortia of the future asteroseismic space missions planned for launch within a couple of years from now.

We need not convince the readers of this journal that asteroseismology is one of the major important science topics in astrophysics in the coming decade. Very substantial investments are being made in Europe to ensure observations of stellar oscillations of unforeseen quality. It concerns both upgraded ground-based instruments and asteroseismic space missions, COROT and Eddington, planned for launch between 2005 and 2008. Besides these European missions, NASA's WIRE satellite was recently put back into operation and the Canadian MOST mission was just launched successfully (see elsewhere this volume).

MOST is the first dedicated seismic space mission. It will provide photometric time series from space for bright stars other than the Sun with unprecedented precision. It is clear that we have an exciting time ahead of us in this research domain.

A successful seismic study is necessarily multidisciplinary, as it involves many different steps, from instrument calibration over state-of-the-art data treatment to theoretical physical modelling of the oscillation frequencies. ENEAS is set up to meet the needs of combining and exchanging the different expertises of its participating institutes in these different areas, of training PhD students and of both training and exchanging post-doctoral researchers. Several well-working initiatives already exist in Europe, mainly working groups concentrated around a specific future space mission. It is one of ENEAS' prime goals to provide an efficient coordination between these existing initiatives in order to achieve an effective integration of expertise. This will guarantee the most fruitful exploitation of the new upcoming data. ENEAS will also be a test-bed for the development of efficient collaboration across the internet, involving a vast range of procedures and skills, as well as extensive common use of a broad variety of data. Furthermore, procedures will be incorporated for the joint training of students, which is an essential part of our project.

Management of ENEAS

During the ENEAS kick-off meeting, a plan was prepared to install a management structure for the network through a call for candidates and an election procedure. These positions have been filled. The network is led by a coordinator, three co-coordinators and a team of eleven managers. Each of the managers is responsible for particular topics of ENEAS. The current management team was installed for two years (period 2003 - 2004) and consists of:

- Coordinator: Conny Aerts (Belgium)
- Co-coordinators: Annie Baglin (France), Jørgen Christensen-Dalsgaard (Denmark), Don Kurtz (UK)
- Managers: Marie-Jo Goupil (France), Guenter Houdek (UK), Hans Kjeldsen (Denmark), Don Kurtz (UK), Yveline Lebreton (France), Carla Maceroni (Italy), Arlette Noels (Belgium), Alex Schwarzenberg-Czerny (Poland), Petr Skoda (Czech Republic), Enrique Solano (Spain), Mike Thompson (UK).

Meanwhile, 256 scientists from 43 institutes have joined ENEAS. In each of these 43 institutes one contact person was appointed. This person is responsible for a good interface between the ENEAS management team and each of the

participating institutes. The contact persons can be found on the ENEAS web page. The purpose of this web page is described below and its practical implementation and accessibility is discussed in another paper in this volume.

Collaboration over the internet

ENEAS presents unique challenges in terms of the establishment of efficient collaboration between the widely dispersed groups, with overlapping and complementary expertise. Although much will be accomplished through the exchange of scientists at all levels within the network, full use will be made of the possibilities of collaboration over the internet. An important part of the project will be to test and utilize techniques for such collaboration. A specific team of five ENEAS managers has been assigned the task to define and implement appropriate aspects of internet collaboration, which range from information provision to active and efficient data mining and specialised software usage, including internet teaching.

A first aspect of these activities will be the establishment and maintenance of a central ENEAS web page. This will provide information on the ENEAS participants, new job openings at the ENEAS institutes, announcements of meetings of interest to ENEAS participants, general presentation of ENEAS activities for the broad community of physicists, on-line documentation, tools for outreach and public lecturing, etc.

A second crucial aspect will be the establishment of Europe-wide high-level (internet) courses on asteroseismology, benefitting from the broad range of expertise of the staff present in the network. Efficient ways to store and exchange data through the internet will be developed, including observations of stellar oscillations, "classical" observations of stellar properties, software for the different analysis methods, theoretical models, etc. in such a way that they can be used efficiently and on-line throughout the network. We stress that on-line catalogues of analysis algorithms with short descriptions and contact persons will be made available as a valuable and rather new tool to allow easy communication between instrumentalists, observers and theoreticians.

ENEAS-RTN

The first task taken up by the management team was to seek funding for ENEAS. Two major ENEAS goals are to achieve integration of expertise across Europe and to train young scientists. These goals perfectly fulfill the criteria of a Marie-Curie Research Training Network in the sixth framework programme of the European Union. An application for such a training network was submitted on 1 April 2003 (not a joke..). We called it the European Network of Excellence

in AsteroSeismology Research Training Network, with acronym ENEAS-RTN. Twenty eight ENEAS institutes, i.e. those that have the capacity and are prepared to provide training to young scientists, take part in ENEAS-RTN. The complete application text of ENEAS-RTN can be found on the ENEAS web page.

In specifying the core research activities of ENEAS-RTN we have considered what should be done to be ready to interpret the forthcoming data from the ground and from space and to improve significantly our knowledge of the physics inside the stars. This has resulted in the definition of three research themes in which training will be provided:

1. ENEAS-RTN theme 1: Models and Inversions.
2. ENEAS-RTN theme 2: Ground-based observing strategies and new observations. Exploration of existing data.
3. ENEAS-RTN theme 3: Analysis of data from the large future space databases. Data analysis methods and error analysis.

The work plan of ENEAS-RTN consists of the creation of exchange visit positions with a duration of three months and one-year positions at the ENEAS institutes. These will be filled by open calls to the community. Besides these exchanges we plan the organisation of tutorials and workshops in each of the three themes.

Call for participation

We repeat that ENEAS will play the role of a coordinating and integrating facility with respect to the already existing and well-working initiatives concentrated on particular space missions and ground-based networks. It will also set up additional initiatives that are independent of the character of these specific missions and networks if needed. We invite everyone who is interested in participating in our network to consult the ENEAS web page (<http://www.eneas.info>) and/or to contact an ENEAS manager for further information.

