

# **The Physics of Chromospheric Plasmas**

Coimbra Solar Physics Meeting – CSPM-2006

**October 9 - 13, 2006, Coimbra, Portugal**

This is the **Final Announcement** of the Coimbra Solar Physics Meeting “The Physics of the Chromospheric Plasmas” (CSPM-2006) to be held at the University of Coimbra. We invite a wide scientific community to join us for discussing the state-of-art of the solar chromospheric research and related topics. CSPM-2006 will be also the final meeting of the **European Solar Magnetometry Network (ESMN)**.

## **Objectives**

In 2006, the Astronomical Observatory of the University of Coimbra (Coimbra, Portugal) – Observatório Astronómico da Universidade de Coimbra (OAUC) - will celebrate the 80th anniversary of performing the first spectroheliographic observations in Coimbra. Full-disk spectroheliograms have been routinely taken in the Ca II K-line (K1 and K3) and in 1990 regular observations in the H $\alpha$  line have also started.

This anniversary is an excellent opportunity to organize an international solar physics meeting, jointly with a historical session commemorating the life and work of Prof. Francisco Costa Lobo (1864-1945) who installed the spectroheliograph in Coimbra in the 1920s. The instrument itself is a twin of the spectroheliograph operated at the Observatoire de Meudon. The Coimbra University itself (founded in 1290) is one of the oldest European universities. The meeting will take place on its campus just inside the Coimbra historical down-town and will also include an excursion to the Coimbra Observatory which is located at the city periphery.

The scientific meeting will cover various aspects of chromospheric plasmas which are particularly well observed in the above-mentioned H $\alpha$  and Ca II lines, but also in a variety of other lines including the UV and EUV spectral range. This will include the structure and dynamics of the chromosphere (cell interior, network, spicules etc.) as well as other features seen at the chromospheric level or having the properties of plasmas at chromospheric temperatures: sunspots chromosphere, plages, chromospheric flares, filaments etc. The relation of such plasmas to other atmospheric layers and/or processes will also be discussed, in particular using the UV and EUV data from SOHO (ESA/NASA) and other space telescopes.

A long-term (cyclic) evolution of the chromosphere and its activity, including solar irradiation variations and effects on space weather, will be included, in particular with respect to long-term observations made in Coimbra. Finally, since this meeting is organized around the above-mentioned anniversary, a session devoted to new solar instruments capable of observing chromospheric plasmas will be held (including the space instrumentation).

The conference programme will contain the following sessions:

### **Historical Session**

**Session 1: Structure and dynamics of the solar chromosphere**

**Session 2: Active regions and sunspots**

**Session 3: Prominences and filaments**

**Session 4: Chromospheric flares**

**Session 5: Long-term variations**

**Session 6: New solar instrumentation**

### **Venue & Location**

The meeting will be organized in Coimbra, an old university town situated in the central region of Portugal, between Lisbon (200 km) and Porto (100 km) and about 35 km from the Atlantic coast at Figueira da Foz. It is easily reached from Lisbon and Porto, which both have international airports, by train (2h from Lisbon, 1h15m from Porto) or by bus. The A1 motorway from Lisbon to Porto passes close to Coimbra; there are also good road connections with Spain through Salamanca.

The meeting will take place at the University of Coimbra, in the auditorium "*Auditorio da Reitoria*".

### **Programme of the meeting**

#### **Sunday, 8 October**

Arrival, **18.00 -20.00**: Registration and welcome drink  
Meeting of the SOC/LOC

#### **Monday, 9 October**

**Morning ( 9.00 -12.30 )**

Welcome addresses

***Historical session:***

Chairperson: P. Heinzel

Francisco Costa Lobo and the Coimbra spectroheliograph - **A. Soares Alves** (OUAC)  
80 Years of Solar Astrophysics in Coimbra - **Z. Mouradian** (France) and A. Garcia (Portugal)

Coffee break 10.20 – 10.50

***Session 1: Structure and dynamics of the solar chromosphere***

Chairperson: M. Carlsson

*Key-note 1:* Observational aspects of the chromosphere - **R. J. Rutten** (Netherlands)

**A. G. de Wijn**, B. De Pontieu, R.J. Rutten: Multi-wavelength observations of chromospheric and transition region structures

**G. Tsiropoula**, K. Tziotziou, P. Heinzel, U. Schühle, and P. Young: Multiwavelength analysis of a solar quiet region

**G. Cauzzi**: Acoustic shocks in the quiet chromosphere

**12.30 – 14.30** Lunch

**Afternoon ( 14.30 -18.00 )**

***Session 1: Structure and dynamics of the solar chromosphere***

Chairperson: R. J. Rutten

*Key-note 2:* High resolution observations and modelling of chromospheric spicules -

**B. de Pontieu** (USA), V. Hansteen, L. Rouppe van der Voort, M. van Noort, M. Carlsson

**Ø. Langangen**, M. Carlsson, L. R. van der Voort, V. Hansteen: High spatial resolution spectroscopy of the solar chromosphere

**O. Steiner** and S. Wedemeyer-Böhm: What is heating the quiet-Sun chromosphere?

**R. Erdélyi**: Trapped eigenoscillations in the lower solar atmosphere: is there a resonant coupling ?

Coffee break 16.10 - 16.40

**J. Trujillo Bueno**, R. Ramelli, L. Merenda and M. Bianda: The magnetic field of solar chromospheric spicules

**A. Pietarila**, H. Socas-Navarro and Th. J. Bogdan: The Ca IR triplet as a diagnostic for chromospheric magnetism

**R. Manso Sainz** and J. Trujillo Bueno: Scattering polarization in the Ca II IR triplet for the diagnostics of the solar chromosphere

**A. Asensio Ramos** and J. Trujillo Bueno: A user-friendly code for the diagnostics of the dynamical and magnetic properties of chromospheric plasma structures

**Evening ( 19.00 )**

Welcome reception at the old Coimbra University

**Tuesday, 10 October**

**Morning ( 9.00 -12.30 )**

***Session 1: Structure and dynamics of the solar chromosphere***

Chairperson: J. Trujillo Bueno

*Key-note 3:* Chromospheric modelling - **M. Carlsson** (Norway)

**E.H. Avrett:** New models of the solar chromosphere and transition region determined from SUMER observations

**A. Title** and B. de Pontieu: Coupling of the magnetic field to the outer atmosphere

**J. Leenaarts:** Non-equilibrium hydrogen ionization in 3D simulations of the solar chromosphere

Coffee break 10.40 – 11.10

Poster viewing

**12.30 – 14.30** Lunch

**Afternoon ( 14.30 -18.00 )**

**Session 2: Active regions and sunspots**

Chairperson: G. Tsiropoula

*Key-note 1:* Semiempirical models of solar and stellar active chromospheres - **P. Mauas** (Argentina)

**M. Sobotka** and T. Roudier: Horizontal motion of granules in the vicinity of sunspots

**G. Rüdiger**, L. L. Kitchatinov: Structure and evolution of sunspots

Coffee break 16.10 - 16.40

*Key-note 2:* Chromospheric cloud-model inversion techniques - **K. Tziotziou** (Greece)

E. Pariat, **B. Schmieder**, A. Berlicki, A. López Ariste: Spectro-photometry of Ellerman bombs observed with THEMIS

**H. Balthasar**, P. Gömöry, M. Sánchez Cuberes, V. Bommier: The three-dimensional structure of sunspots

**Evening ( 20.00 )**

**Public lecture: B. Schmieder:** Our active Sun controls the space weather

**Wednesday, 11 October**

**Morning ( 9.00 -12.30 )**

**Session 3: Prominences and filaments**

Chairperson: B. Schmieder

*Key-note 1:* The fine structure of solar prominences - **P. Heinzel** (Czech Republic)

**N. Labrosse**, P. Gouttebroze, J.-C. Vial: Spectral diagnostics of active prominences

**S. Gunár**, B. Schmieder, P. Heinzel: Prominence parameters derived by 2D modeling from hydrogen Lyman series measured by SOHO/SUMER

**S. Koutchmy** and P. Lamy: Old and new aspects of the prominence physics from coronal observations

Coffee break 10.40 – 11.00

*Key-note 2:* Unveiling the magnetic topology of prominences - **A. López Ariste** (France)

**L. Belluzzi**, E. Landi Degl'Innocenti, and J. Trujillo Bueno: Spectropolarimetry of the D lines of alkali atoms

**D.H. Mackay** and A.A. van Ballegoijen: Modeling of the hemispheric pattern of filaments

*12.20 – 13.20* Lunch

*Afternoon ( 13.20 -19.00 )*

Excursions:     Biblioteca Joanina, the old library of the University of Coimbra.  
                  Conimbriga – ruins of the ancient roman town  
                  Spectroheliograph – Coimbra Astronomical Observatory

*Evening ( 20.00 )*

**Public lecture: S. Solanki:** Variations of the Sun's activity and brightness: are they causing global climate change?

**Thursday, 12 October**

*Morning ( 9.00 -12.30 )*

**Session 4: Chromospheric flares**

Chairperson: W. Curdt

*Key-note 1:* The chromosphere and flare energy - **H. Hudson** (USA)

**M.D. Ding:** The origin of solar white-light flares

**B. Joshi**, P. K. Manoharan, A. M. Veronig and P. Pant: Radio, H-alpha and RHESSI investigations of an X-class flare and associated CME near the Sun and in the interplanetary medium

**L. Fletcher**, I. G. Hannah, H.S.Hudson, T. R. Metcalf: A TRACE white light and RHESSI HXR study of flare energetics

Coffee break 10.40 – 11.10

*Key-note 2:* Observations and modelling of line asymmetries in chromospheric flares  
- **A. Berlicki** (Poland)

**C. Sasso**, A. Lagg, S. K. Solanki: Observations and analysis of the full Stokes vector in a flaring region in the HeI 1083.0 nm multiplet

**M. Varady**, M. Karlický, J. Kašparová: Return current and the energy deposit in flares

*12.30 – 14.30* Lunch

*Afternoon ( 14.30 -18.00 )*

**Session 4: Chromospheric flares**

Chairperson: L. Fletcher

**L.K. Kashapova**, P. Kotrč, and Yu. A. Kupryakov: Diagnostics of accelerated particle beams by spectral observations in Balmer series lines

**H. Li** and J. You: Spectroscopic property of solar flares in different lines

**W. Curdt** and R. Landi: On the unidirectionality of SUMER hot loop oscillation events: evidence for DC-heating

**V. Andretta**, P. J. D. Mauas, A. Falchi, L. Teriaca: Spectroscopic measurements of helium abundance in an active region

Coffee break 16.10 - 16.40

Poster viewing

***Evening ( 20.00 )***

Conference dinner in the "Palácio S. Marcos", an old Portuguese edifice located 20 km from Coimbra.

**Friday, 13 October**

***Morning ( 9.00 -12.30 )***

***Session 5: Long-term variations***

Chairperson: I. Dorotovič

*Key-note 1:* Global variations of the chromospheric irradiance - **S. Solanki** (Germany)

**I. Ermolli**, A. Tlatov, S.K. Solanki, N.A. Krivova: Solar activity and irradiance studies with Ca II spectroheliogram time series: Potential problems and possible solutions

**J. Vilinga** and S. Koutchmy: Solar cycle variations of the chromospheric prolateness

**N. Vitas**, I. Vince, S. Danilovič, and O. Andriyenko: Is the solar Mn I 539.4 nm line variation really explained ?

Coffee break 10.40 – 11.10

*Key-note 2:* Magnetic heating of the chromosphere and its relationship with long term trends – **J. Fontenla** (USA)

**J. Aboudarham**, I. Scholl, M. Fouesneau, M. Galametz, F. Gonon, A. Maire, Y. Leroy: A new step in the automation of Meudon's Synoptic Map of Solar Activity

**C. Denker**, M. Naqvi, N. Deng, A. Tritschler: The Synoptic Observing Program at Big Bear Solar Observatory

**12.30 – 14.30** Lunch

***Afternoon ( 14.30 -18.00)***

***Session 6: New solar instrumentation***

Chair: J.-C. Vial

**A. Vourlidas**: Chromospheric science with the STEREO mission

**A. Title**: The AIA Instrument System

**B. Fleck** and R. Marsden: Solar Orbiter - a mission update

S. Keil, **H. Uietenbroek**, T. Rimmele, J. Wagner & the ATST Team: The Advanced Technology Solar Telescope Status Report

**R. J. Rutten** and **R. H. Hammerschlag**: Options for the Dutch Open Telescope

Coffee break 16.10 - 16.40

**B. Gelly**: THEMIS: instrumentation and strategy for the future

**H. Balthasar**: GREGOR - the new German solar telescope

A. Feller, **R. Ramelli**, J.O. Stenflo, D. Gisler: First measurement of the polarization of the flash spectrum during a total solar eclipse

**P. Kotrč:** The modernized solar optical spectrograph at the Ondřejov observatory

Conclusions of the meeting

Meeting of the SOC/LOC

## **Scientific Organizing Committee**

**M. Carlsson** (Institute of Theoretical Astrophysics, Oslo, Norway)

**W. Curdt** (Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany)

**C. Denker** (Big Bear Solar Observatory, Big Bear City, CA, USA)

**I. Dorotovič** (OAUC, Coimbra, Portugal; Slovak Central Observatory, Hurbanovo, Slovakia)

**L. Fletcher** (University of Glasgow, Glasgow, Scotland, United Kingdom)

**P. Heinzel** (Astronomical Institute, Ondřejov, Czech Republic) - **Chair**

**R. Rutten** (Utrecht University, Utrecht, Netherlands)

**B. Schmieder** (Observatoire de Meudon, Meudon, France)

**J. Trujillo-Bueno** (Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain)

**G. Tsiropoula** (National Observatory of Athens, Athens, Greece)

**H. Uitenbroek** (NSO Sacramento Peak Observatory, New Mexico, USA)

**J. C. Vial** (Institut d'Astrophysique Spatiale, Orsay, France)

## **Local Organizing Committee (OAUC Coimbra)**

**S. Batista** (GAUC, ESRI Portugal, S. A.),

**I. Dorotovič** (OAUC, GAUC, UNINOVA),

**J. Fernandes** (OAUC, GAUC) – **Chair**,

**A. Garcia** (OAUC, GAUC).

To contact the LOC: [cspm2006@mat.uc.pt](mailto:cspm2006@mat.uc.pt)

## **Calendar of events**

- **31 August** - Closing date for hotel reservation
- **15 September** - Closing date for registration and late abstracts (can be accepted only as posters)
  - Final Announcement
- **8 October** - Arrival, registration
- **9 October** - Meeting starts
- **13 October** - Meeting ends

## **Presentation of contributions**

The Key-note talks for CSPM-2006 have:

30 min (plus 5 min for discussion) in the Historical Session,

30 min (plus 10 min for discussion) in the Sessions 1-5.

Other oral contributions (including all the talks in the Session 6)

have 15 min (plus 5 min for discussion).

The maximum size of posters is 100 cm x 120 cm (width x height).

Conference PC + Video projector and overhead projector will be available for oral contributions.

Wi-fi internet connection and few PCs with internet connection will be available for participants at the Meeting site.

## **Proceedings**

The proceedings of the Coimbra Solar Physics Meeting 2006 „The Physics of Chromospheric Plasmas“ will be published in the ASP (Astronomical Society of the Pacific) Conference Series [<http://www.astrosociety.org/pubs/cs/confseries.html>]. The editors are P. Heinzel, I. Dorotovic and R.J. Rutten. The deadline for manuscript submission will be **30 November 2006**.

To prepare manuscripts of your contribution(-s), please download the **author's macros** from our website [[http://www.mat.uc.pt/~cspm2006/download/cspm2006\\_aspmacros.zip](http://www.mat.uc.pt/~cspm2006/download/cspm2006_aspmacros.zip)] or directly from the ASP Conf. Series website [<http://www.astrosociety.org/pubs/cs/itp/macros.html>], print out the file aspauthor2005.ps, aspauthor2005.tex, or aspauthor2005.pdf for a full set of instructions for authors. These instructions explain, step by step, how to prepare your article using the ASP Conf. Series style file (asp2004.sty). Please follow these instructions carefully (©ASP Conf. Series website).

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## **Accommodation Facilities**

The LOC have an agreement with the local travel agency VIAGENS ABREU to provide hotel reservation and social events arrangements. Special hotel rates have been negotiated for the participants of the meeting in several hotels.

The LOC reserved several rooms in the University Residence (Residência Universitária) at a price of 7.50 Euros per person in a double room, per night.

## **Visa Applications**

Those who need visa (participants and/or accompanying persons) to enter Portugal have to contact a Portuguese Embassy well in advance. If you need a letter of invitation, please contact Joao Fernandes at: [cspm2006@mat.uc.pt](mailto:cspm2006@mat.uc.pt) or [jmfernan@mat.uc.pt](mailto:jmfernan@mat.uc.pt).

### ***Important websites:***

CSPM-2006: <http://www.mat.uc.pt/~cspm2006/>

Coimbra University: <http://www.uc.pt/english/>

Coimbra Observatory: <http://www.mat.uc.pt/~obsv/obsv/>

SEE YOU SOON IN COIMBRA !