

HELAS NETWORK

'Synergies between solar and stellar modelling'

Rome - Italy

22 -26 June, 2009

PROGRAMME

Monday, June 22

8:30 - 10:30 Registration and setting up poster

INTRODUCTION

chair: F. D'Antona

10:30 - 10:40 Welcome address

10:40 - 10:50 C. Aerts: *The NA5 HELAS activity*

10:50 - 11:30 I. W. Roxburgh: *Solar and stellar models: helio and astero-seismology*

SESSION 1: SOLAR AND STELLAR MODELS

chair: A. Weiss

11:30 - 12:10 A. Serenelli: *New results on standard solar models*

12:10 - 12:30 S. V. Ayukov: *Questions on the solar structure and evolution*

12:30 - 13:00 Y. Lebreton: *Comparison between stellar models and reliability of the theoretical models*

13:00 - 15:00 Lunch

SESSION 2: HELIO- AND ASTEROSEISMOLOGY

chair: E. Michel

15:00 - 15:40 S. Basu: *Helioseismology as diagnostic of the solar interior*

15:40 - 16:20 J. Christensen-Dalsgaard: *Prospects for asteroseismic inferences*

16:20 - 16:50 Coffee break and posters session

- 16:50 - 17:10 N. Ozel: *The sensitivity of solar-like stellar models with respect to the seismic constraints*
- 17:10 - 17:30 F.J.G. Pinheiro: *Asteroseismology and the degeneracy of model solutions for subgiants stars*
- 17:30 - 17:50 E. Sipahi: *Pulsational and evolutionary analysis of the first known galactic eclipsing binary with a type II Cepheid component*
- 18:00 - 18:45 Concert of medieval music by the group 'Amoroso Cantar'
- 19:00 - 21:00 Welcome cocktail at "Caffè delle Arti"

Tuesday, June 23

SESSION 3: EQUATION OF STATE AND NUCLEAR REACTIONS

chair: J. Christensen-Dalsgaard

- 9:00 - 9:40 W. Däppen: *Accurate and versatile Equations of state*
- 9:40 - 10:00 V. A. Baturin: *Application of SAHA-S EOS to solar modelling*
- 10:00 - 10:30 Photo group, coffee break and posters session
- 10:30 - 11:10 O. Straniero: *Nuclear reactions in stellar interiors*
- 11:10 - 11:30 N. Yusof: *The charged-particle induced thermonuclear reaction rates of some light nuclei by using the exact tunneling probability*
- 11:30 - 11:50 K. Mussack: *Dynamic screening in solar and stellar nuclear reactions*

Free afternoon or tour organized by the LOC to Villa D'Este of Tivoli

Wednesday, June 24

SESSION 4: THE ATMOSPHERE, ABUNDANCES AND OPACITIES

chair: A. Noels

- 9:00 - 9:40 N. Grevesse: *The solar chemical composition*
- 9:40 - 10:20 B. Gustafsson: *Abundances determination in the stars—and how do they relate to solar abundances?*
- 10:20 - 10:40 S. Vauclair: *Precise determination of stellar parameters from detailed asteroseismology: solar type stars*
- 10:40 - 11:10 Coffee break and posters session

- 11:10 - 11:40 J. Melendez: *The lithium problem*
 11:40 - 12:10 S. Degl'Innocenti: *Helium and metal diffusion in the Sun and in cluster stars*
 12:10 - 12:30 H. Hu: *Backtracking the evolution of subdwarfs B stars with asteroseismology*
 12:30 - 12:50 S. Theado: *Radiative accelerations, accumulation of iron and thermohaline convection*
 12:50 - 14:30 Lunch

**SESSION 5: CELEBRATING THE BIRTHDAY OF L. PATERNO'
 SOLAR AND STELLAR ROTATION**

chair: M.P. Di Mauro

- 14:30 - 14:40 I. Roxburgh
 14:40 - 14:50 G. Belvedere
 14:50 - 15:00 S. Sofia
 15:00 - 15:30 L. Paternó: *The solar differential rotation: a historical view*
 15:30 - 16:00 Coffee break and posters session
 16:00 - 16:40 A. Maeder: *Evolution of stellar rotation and transport of angular momentum and chemical mixing*
 16:40 - 17:00 J.P. Rozelot: *Unveiling stellar cores via their flattening*
 17:00 - 17:20 F. Spada: *Semi-analytical modelling of angular momentum and magnetic fields evolution in solar-like radiative cores*
 17:20 - 17:40 R. M. Ouazzani: *Effect of stellar rotation on oscillation frequencies*
 20:30 The Banquet at 'Casina Valadier'

Thursday, June 25

SESSION 6: CONVECTION AND OVERSHOOTING

chair: M. Monteiro

- 9:00 - 9:40 R. Trampedach: *Convection in stellar models*
 9:40 - 10:00 C. Meakin: *Coherent structures, dissipation and stratification in turbulent shell burning convection*
 10:00 - 10:30 J. Montalbán: *Stellar convection in main sequence stars and giants*
 10:30 - 11:00 A. Noels: *Overshooting and semiconvection: structural changes*
 11:00 - 11:30 Coffee break and posters session

- 11:30 - 12:10 G. Houdek: *Solar turbulence and mode physics*
 12:10 - 12:30 T. Gastine: *2-D DNS of convection-pulsations coupling*
 12:30 - 12:50 R. Samadi: *Gravity modes excited by turbulent convection: from the Sun to other stars*
 12:50 - 13:10 K. Belkacem: *Solar-like oscillations in the eta Cephei V1449 Aql*
 13:10 - 13:30 S. Deheuvels: *New insights on the interior of solar-like pulsator thanks to COROT: the case of HD 49385*
- 13:30 - 15:00 Lunch

SESSION 7: SOLAR MAGNETIC FIELD

chair: F. Berrilli

- 15:00 - 15:40 M. Miesch: *Perspectives on the global solar dynamo: turbulence, convection, and shear*
 15:40 - 16:00 I. Kitiashvili: *Realistic MHD simulations of magnetic field effects on solar convection and oscillations*
 16:00 - 16:20 S. Ustyugov: *Magnetohydrodynamic simulation of solar photosphere convection*
- 16:20 - 16:50 Coffee break and posters session
- 16:50 - 17:30 P. Ventura: *2D solar modelling including magnetic fields*
 17:30 - 17:50 M. Ternullo: *Observing the butterfly diagram internal structure*
 17:50 - 18:10 E. Gavryuseva: *The modeling of the global structure of the photospheric magnetic field*
 18:10 - 18:30 R. Simoniello: *Global solar magnetism and p-mode surface velocity amplitudes over solar cycle 23*
- 18:30 - 19:30 Posters session

Friday, June 26

SESSION 8: STELLAR MAGNETIC FIELD

chair: M. Marconi

- 9:00 - 9:40 S. Mathis: *On the origin of stellar magnetic fields: dynamo and relaxation processes*
 9:40 - 10:00 G. Pace: *The discontinuous nature of chromospheric activity evolution*
 10:00 - 10:20 H. Schunker: *Effects of strong magnetic fields on p-modes*
- 10:20 - 10:50 Coffee break and posters session

THE FUTURE AND CONCLUSION OF THE WORKSHOP

chair: C. Aerts

- 10:50 - 11:10 P.F. Moretti: *Double channel MOF imager to study low and medium oscillating modes on-board ADAHELI*
- 11:10 -11:30 E. Fossat: *Asteroseismic possibilities at Concordia, Antarctica*
- 11:30 - 11:50 R. Claudi: *A new opportunity from space: PLATO mission*
- 11:50 - 12:30 S. Sofia: *Conclusive talk*
- 12:30 - 12:35 F. D'Antona: *Concluding remarks*
- 12:35 End of the workshop