

# ISSI WORKSHOP ON SOLAR MAGNETIC FIELDS: FROM MEASUREMENTS TOWARDS UNDERSTANDING

## PROGRAMME

Monday 12 January 2015

08:30-09:00	Registration in ISSI, Hallerstrasse 6, 1 <sup>st</sup> floor	
09:00	Welcome	
09:15 - 09:30	Introduction to the Workshop: ISSI workshop series on what drives the solar activity cycle	André Balogh (by Skype)
09:30 - 10:00	History of solar magnetic observations from Hale to the present	Jan Stenflo

### 1. BASIC PHYSICS OF SOLAR MAGNETIC FIELD MEASUREMENTS

10:00 – 10:45	Overview of solar magnetic field measurements	Jack Harvey
10:45-11:15	<i>Coffee break</i>	
11:15 – 11:45	Physical basis of spectropolarimetry	Egidio Landi degl'Innocenti

### 2. PHOTOSPHERIC MEASUREMENTS – TECHNIQUES, INTERPRETATION, CAPABILITIES AND LIMITATIONS

11:45 - 12:15	Photospheric magnetic fields measurements (ground-based)	Sanjay Gosain
12:15 - 12:45	Photospheric magnetic fields measurements (space-based)	Bruce Lites

13:00-14:00    *Lunch*

	<b>Chairman</b>	
14:00 - 14:30	Small-scale horizontal vs vertical fields	Juan Manuel Borrero
14:30 - 15:00	Inversions	Michiel van Noort
15:00 - 15:30	Polar fields	Gordon Petrie

15:30-16:00    *Coffee break*

### 3. CHROMOSPHERIC MEASUREMENTS – TECHNIQUES, INTERPRETATION, CAPABILITIES AND LIMITATIONS

16:00 - 16:30	Chromospheric magnetic fields measurements	Andreas Lagg
16:30 - 17:00	Inversions	Jaime de la Cruz Rodriguez
17:00 - 17:30	Radiative transfer effects in the solar chromosphere: influence on magnetic field measurements	Han Uitenbroek

17:30            *Welcome reception*

**4. CORONAL MEASUREMENTS – TECHNIQUES, INTERPRETATION  
CAPABILITIES AND LIMITATIONS**

09:00 - 09:30	Near-IR measurements	Phil Judge
09:30 - 10:00	Radio and mm wavelength measurements	Stephen White
10:00 - 10:30	UV Polarized Radiation Observables for Probing the Upper Chromosphere and Corona	Javier Trujillo Bueno
10:30 - 11:00	Challenges of coronal magnetic diagnostics	Roberto Casini

11:00-11:30     *Coffee break*

**5. HELIOSPHERIC MEASUREMENTS AND INTERPRETATION**

11:30 - 12:00	Heliospheric magnetic field measurements	André Balogh (by Skype)
12:00 - 12:30	Solar-heliospheric magnetic connections	Ed Cliver

12:30-14:00     *Lunch*

**6. CORONAL MAGNETIC FIELD MODELS: POTENTIAL FIELD SOURCE  
SURFACE MODELS AND BEYOND**

14:00 - 14:30	Overview of coronal magnetic fields and models	Gordon Petrie
14:30 - 15:00	Coronal magnetic field extrapolation	Thomas Wiegmann
15:00 - 15:30	Assessment of MHD and PFSS models	Pete Riley

15:30 - 16:00     *Coffee break*

**DISCUSSION: STATUS AND PROSPECTS OF SOLAR MAGNETIC FIELD  
MEASUREMENTS**

16:00 – 16:30	Small-scale magnetic fields	Sami Solanki
16:30 – 17:30	A brainstorming discussion led by:	Jack Harvey

**7. MAGNETOCONVECTION AS A MECHANISM FOR CREATING FINE SCALE STRUCTURE, SUNSPOTS, TURBULENT FIELDS (LOCAL DYNAMO)**

09:30 - 10:00	Magnetoconvection (non-sunspots)	Åke Nordlund
10:00 - 10:30	Turbulence/Local dynamo	Manfred Schüssler
10:30 - 11:00	The evolution of the Sun's toroidal flux	Robert Cameron

11:00-11:30      *Coffee break*

11:30 - 12:00	Sunspots (observations)	Göran Scharmer
12:00 - 12:30	Sunspots (theory & modelling)	Matthias Rempel

12:30 - 13:00      [Young scientists' presentations](#)

13:00              *Lunch*

14:00              Free time to visit the attractions of Bern  
 Also: All ISSI facilities are available for small group discussions

19:00              *Workshop dinner: Kornhauskeller restaurant, Bern*

**8. FLUX EMERGENCE AND DECAY, LARGE-SCALE FLOWS AND MAGNETIC FIELD TRANSPORT, DIFFUSION, ACTIVE REGIONS EVOLUTION, POLARITY REVERSALS**

09:30 - 10:00	Subsurface magnetic fields	Michael Thompson
10:00 - 10:30	Flux emergence	Mark Cheung
10:30 - 11:00	Active region evolution	Lidia van Driel-Gesztelyi

*11:00-11:30 Coffee break*

11:30 - 12:00	Magnetic field diffusion	Valentin Martínez Pillet
12:00 - 12:30	Global flux transport and polarity reversals	Yi-Ming Wang
12:30 - 13:00	Global magnetic models	Marc de Rosa

*13:00-14:00 Lunch*

**9. ORIGIN AND VARIABILITY OF THE SOLAR MAGNETIC FIELD, STATUS AND PERSPECTIVES OF DYNAMO THEORIES (GLOBAL VS LOCAL DYNAMOS)**

14:00 - 14:30	Flux transport dynamo	Mausumi Dikpati
14:30 - 15:00	The distributed dynamo	Steve Tobias
15:00 - 15:30	Near-surface dynamos	Axel Brandenburg

*15:30-16:00 Coffee break*

16:00 - 16:45	<b>Young scientists' presentations</b>	
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16:45 - 17:30	General outline of ISSI book, organisation, followed by splinter groups for book chapters  ISSI facilities, rooms available	Rudolf von Steiger
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Friday 16 January 2015

**10. REQUIREMENTS AND PERSPECTIVES FOR SOLAR MAGNETIC FIELD MEASUREMENTS**

09:30 - 10:00	The future of solar magnetic measurements - ground-based	Lucia Kleint
10:00 - 10:30	The future of solar magnetic measurements - space-based	Achim Gandorfer
10:30 - 11:00	The magnetic fields of stars	Svetlana Berdyugina
11:00 - 11:30 <i>Coffee break</i>		
11:30 - 12:15	Concluding talk	Rudolf von Steiger
12:15 - 13:00	Reports from splinter groups, authors Book plans, actions, schedule	Led by Convenors
13:00	<i>Close of Workshop</i>	