

Programme of IAU Symposium 365

Time	Author(s)	Title	In- Person/ Virtual
Monday, 21 August			
08:45–09:30	Registration of participants		
09:30–10:00	Opening ceremony		
Session 1. Solar and Stellar Convection			
<i>Chair: Sami Solanki</i>			
10:00–10:30	Aaron Birch	Spectra of large-scales flows on the Sun (<i>invited talk</i>)	P
10:30–11:00	Petri Käpylä	Subadiabatic convection and overshooting in deep convection zones (<i>invited talk</i>)	V
11:00–11:30	Coffee break		
<i>Chair: Ulysses Sofia</i>			
11:30–12:00	Youhei Masada	Modeling Convection and Transport in the Sun (<i>invited talk</i>)	P
12:00–12:15	<u>Irina N. Kitiashvili</u> , A.G. Kosovichev and A. A. Wray	3D Radiative Hydrodynamic Modeling of Shallow Convection Zones of Main-Sequence Moderate-Mass Stars	V
12:15–12:30	<u>Christopher Hanson</u> , S.B. Das, P. Mani, S. Hanasoge and K.R. Sreenivasan	Helioseismic imaging of supergranules reveals new insight into solar convection	V
12:30–12:45	<u>Quentin Noraz</u> , A.S. Brun and A. Strugarek	Impact of the Nusselt number on the energy distribution among solar convection scales	V
12:45–13:00	<u>Nathan Kleeorin</u> and I. Rogachevskii	On the nature of turbulent convection in the sun and stars: laboratory experiments, theory and mean-field simulations	P
13:00–14:30	Lunch		
<i>Chair: Laurent Gizon</i>			
14:30–14:45	<u>Yukun Luo</u> , J. Jiang and R. Wang	Analyzing supergranulation and its variations over solar cycles 23 and 24 based on magnetic power spectra	P
14:45–15:00	Xavier Haubois	Imaging stellar surface features with optical interferometry	P

15:00–15:15	Teresa A. M. Braun	Applying the Kuhfuss Convection Theory to Convective Envelopes	P
Session 2. Differential Rotation and Meridional Circulation			
<i>Chair: Laurent Gizon</i>			
15:15–15:45	<u>Alexei A. Pevtsov</u> , Yu.A. Nagovitsyn and L. Upton	The Sun's Large-Scale Flows: differential rotation and meridional circulation (<i>invited talk</i>)	P
15:45–16:15	S.P. Rajaguru	Meridional Circulation in the Solar Convection Zone: Reconciling Helioseismic Measurements (<i>invited talk</i>)	P
16:15–16:45	Coffee Break		
<i>Chair: Ilan Roth</i>			
16:45–17:00	<u>Marianne Faurobert</u> , T. Corbard, B. Gelly, R. Douet and D. Laforgue	Rotational shear in the low photosphere of the Sun	P
17:00–17:15	<u>Sushanta C. Tripathy</u> , K. Jain, S. Kholikov, and R. Komm	Probing the Sun's Near Surface Shear Layer using HMI Spherical Harmonic Coefficients	V
17:15–17:30	Leonid L. Kitchatinov	Near-surface shear layer of solar rotation: origin and significance	V
17:30–17:45	<u>Arnab Rai Choudhuri</u> and B.K. Jha	A theoretical model of the near-surface shear layer of the Sun	V
17:45–18:00	<u>Maria Camisassa</u> and N.A. Featherstone	The Transition from Solar-like to Antisolar Differential Rotation: A Geometric Interpretation	P
18:00–18:15	<u>Alexander V. Getling</u> and A.G. Kosovichev	Superrotation of the pattern of convective structures at various depths in the solar subphotospheric zone	P
18:15–18:30	<u>Irina N. Kitiashvili</u> , A.G. Kosovichev, A.A. Wray and V.M. Sadykov	Fine Structure of Differential Rotation and Meridional Flows in the Near-Surface Shear Layer of the Sun from 3D Radiative Hydrodynamics Simulations	V
19:00–21:00	Welcome Reception		
Tuesday, 22 August			
<i>Chair: Alexei Pevtsov</i>			
9:00–9:15	Alexander G. Kosovichev	Properties of Inertial Oscillations and Rossby Waves in Solar and Stellar Convection Zones	V
9:15–9:30	<u>A.S. Kutsenko</u> , V.I. Abramenko and D.V. Litvishko	The rotation rates of solar active regions as a constraint for the global dynamo models	V
9:30–9:45	<u>Ruizhu Chen</u> and J.-W. Zhao	Frequency-dependent Measurements of the Sun's Interior Meridional Circulation	P

9:45–10:00	<u>Sushant S. Mahajan</u> , X.-D. Sun and J.-W. Zhao	Removal Of Active Region Inflows Reveals a Weak Solar-cycle-scale Trend In Near-surface Meridional Flow	V
10:00–10:15	<u>Sushant S. Mahajan</u> , D. Nandy and Petrus C. Martens	Lenz’s Law at Work in the Solar Interior: Interplay of Magnetic Tension and Differential Rotation	V
10:15–10:30	<u>Dibya Kirti Mishra</u> , S. Routh, B.K. Jha, S. Chatterjee and D. Banerjee	Differential Rotation of the Solar Chromosphere using multidecadal Ca K spectroheliograms	P
10:30–10:45	Yash Mandowara, Y. Bekki and L. Gizon	Observational study of Reynolds stresses associated with solar inertial modes	P
10:45–11:00	A. Araújo and <u>Adriana Valio</u>	Differential rotation of stars from spot transit mapping: dependence on rotation period and effective temperature	P
11:00–11:30	Coffee Break		
Session 3. Global dynamo. Solar and Stellar Activity Cycles			
<i>Chair: Andrey G. Tlatov</i>			
11:30–12:00	Gustavo Guerrero	Advances in global simulations of solar and stellar dynamos (<i>invited talk</i>)	V
12:00–12:30	Bidya Binay Karak	Recent Developments in the Babcock–Leighton Solar Dynamo Theory (<i>invited talk</i>)	P
12:30–13:00	Dipankar Banerjee	Solar-cycle observed patterns as revealed from Kodaikanal multi wavelength archive (<i>invited talk</i>)	P
13:00–14:30	Lunch		
<i>Chair: Ruizhu Chen</i>			
14:30–15:00	Jie Jiang	Nonlinear and stochastic mechanisms of the solar cycle and their implications for the cycle prediction (<i>invited talk</i>)	P
15:00–15:30	Dibyendu Nandy	Predicting the Solar Cycle: Progress made and Lessons Learnt (<i>invited talk</i>)	V
15:30–15:45	Chitradeep Saha, S. Chandra and D. Nandy	The Sun’s slumber is not so deep when it goes to sleep!	P
15:45–16:00	<u>Zebin Zhang</u> and J. Jiang	A Babcock–Leighton-type Solar Dynamo Operating in the Bulk of the Convection Zone and its Application to Solar-type Stars	P
16:00–16:30	Coffee Break		
<i>Chair: Aaron Birch</i>			
16:30–16:45	Valery V. Pipin	Doubling dynamo-wave frequency on fast rotating solar analogs?	V
16:45–17:00	<u>K.M. Kuzanyan</u> , N. Kleeorin, I. Rogachevskii and N.T. Safiullin	Magnetic helicity generation, its flux in the solar convective zone and the solar activity cycle	P

17:00–17:15	<u>Dmitry D. Sokoloff</u> , E.V. Yushkov and A.Yu. Serenkova	Resonance and stellar dynamos	P
17:15–17:30	<u>Vindya Vashishth</u> , B.B. Karak and L. L. Kitchatinov	Modelling the long-term variability of sun-like stars: From subcritical to supercritical dynamos	P
17:30–17:45	<u>Valentina I. Abramenko</u> , R.A. Suleymanova and A.V. Zhukova	Insight into the global dynamo operation from the two recent solar cycles of space-based observations	V
17:45–18:00	<u>Regina A. Suleymanova</u> and V.I. Abramenko	Manifestations of the turbulent component of the global solar dynamo in the minima of solar activity	V
18:00–18:15	<u>Akash Biswas</u> , B.B. Karak and R. Cameron	The role of nonlinear toroidal flux loss due to flux emergence in the long-term evolution of the solar cycle	P
18:15–18:30	<u>Egor A. Illarionov</u> and R. Arlt	Two solar minima in the light of reconstructed historical observations	P
18:30–18:45	<u>Pawan Kumar</u> , B.B. Karak and V. Vashishth	Solar cycle variability induced by stochastic fluctuations of BMR properties and at different amounts of dynamo supercriticality	P

Wednesday, 23 August

Session 4. Helioseismology and Asteroseismology

Chair: Mustapha Meftah

9:00–9:30	<u>Alexander G. Kosovichev</u> , S.G. Korzennik and V.V. Pipin	Helioseismic Observations of Solar Torsional Oscillations and Evidence for Dynamo Waves (<i>invited talk</i>)	V
9:30–10:00	Ruizhu Chen	Recent Progress in Time-distance Helioseismology: Meridional Circulation, Far-side Imaging, and Sunquakes (<i>invited talk</i>)	P
10:00–10:30	Laurent Gizon	Inertial modes as probes of solar convection (<i>invited talk</i>)	P
10:30–11:00	Savita Mathur	Convection, rotation, and magnetic activity of solar-like stars from asteroseismology (<i>invited talk</i>)	V

Coffee Break

Chair: Dipankar Banerjee

11:30–11:45	<u>Matthias Waidele</u> and J.-W. Zhao	Solar Rossby waves and their dependence on the solar cycle	P
11:45–12:00	<u>Jordan Philidet</u> and L. Gizon	A 2D model for the excitation of the linearly stable solar inertial modes by turbulent convection	P
12:00–12:15	<u>Angel Martínez</u> and A.C. Donea	Anisotropic seismic ripples from deep locations of seismic sources	V
12:15–12:30	<u>Guifang Lin</u> , Y. Li, T. Wu and S. Jie	The influence of small-scale magnetic fields in the photosphere on surface effects for KIC 11295426 and KIC 10963065	P
12:30–12:45	<u>Ana Brito</u> and I. Lopes	The effect of Coulomb interactions on acoustic oscillations in the outer layers of low-mass stars	P

12:45–13:00	Yuqing Lou	Solar/Stellar Rossby Waves and Tidal Waves in Their Surface Layers	P
13:00–14:30	Lunch		
<i>Chair: Nadezhda Zolotova</i>			
14:30–14:45	Savannah Perez-Piel, J.C. Buitrago-Casas, J.C. Martínez Oliveros and C. Lindsey	Identifying Submerged Acoustic Sources	V
14:45–15:00	David E. Mkrtychian and A.P. Hatzes	Acoustic tomography of the atmosphere of roAp star Alpha Circini	P
15:00–15:15	Biji Lekshmi, L. Gizon ¹ , K. Jain, Z.-C. Liang and J. Philidet	Temporal variations of solar inertial mode parameters	P
15:15–15:45	Coffee Break		
16:00–22:00	Visit to the Byurakan Astrophysical Observatory		
Thursday, 24 August			
Session 5. Local Processes of Magnetic-Flux Emergence. Sunspot and Starspot Formation			
<i>Chair: Alexander Getling</i>			
9:00–9:30	Sami Solanki, Y.C. Unruh and A.S. Shapiro	Some recent results on sunspots and starspots (<i>invited talk</i>)	P
9:30–10:00	Valentina I. Abramenko	Signature of local (turbulent) dynamo on middle and small scales (<i>invited talk</i>)	V
10:00–10:15	Alexander G. Kosovichev	Large-scale Subsurface Flows Associated with Solar Emerging Active Regions	V
10:15–10:30	John T. Stefan and A.G. Kosovichev	Helioseismic Measurement of Subsurface Magnetic Field Characteristics in Developed Sunspots	P
10:30–10:45	Spiridon Kasapis, I.N. Kitiashvili, A.G. Kosovichev, J.T. Stefan and B. Apte	Early Detection of Active Region Emergence in the Solar Interior Using Acoustic Power Maps and Machine Learning Data Analysis	P
10:45–11:00	Anu B. Sreedevi, B.K. Jha, B.B. Karak and D. Banerjee	Observational study of bipolar magnetic regions: Support of thin-flux tube rise model?	P
11:00–11:30	Coffee Break		
<i>Chair: Youhei Masada</i>			
11:30–12:00	Maarit J. Korpi-Lagg, J. Warnecke and M. Rheinhardt	Interaction of different dynamo instabilities in the convection zones of solar-like cool stars: role for magnetism and dynamics (<i>invited talk</i>)	V
12:00–12:30	Lisa A. Upton, I. Ugarte-Urra and B.K. Jha	The Dynamics of Magnetic-Flux Emergence: Sunspot Formation and Evolution (<i>invited talk</i>)	V

12:30–12:45	<u>Tanayveer Singh Bhatia</u> , R. Cameron, H. Peter, S. Solanki, D. Przybylski, V. Witzke and A. Shapiro	Small-scale dynamos in cool stars: magnetic field structure and changes in lower photospheres of F3V to M0V stars	P
12:45–13:00	<u>Bibhuti Kumar Jha</u> , A.B. Sreedevi, B.B. Karak and D. Banerjee	Exploring Sun's Bipolar Magnetic Region Tilts and the Phenomenon of Tilt Quenching through Magnetic Field Dependence	V
13:00–14:30	Lunch		
Session 6. Miscellaneous <i>Chair: Dmitry Sokoloff</i>			
14:30–15:00	<u>Mustapha Meftah</u> and A. Sarkissian	The HRS high-resolution extraterrestrial solar reference spectra for disk-integrated, disk-center, or intermediate cases (<i>invited talk</i>)	P
Session 5. Local Processes of Magnetic-Flux Emergence. Sunspot and Starspot Formation (ctd) <i>Chair: Dmitry D. Sokoloff</i>			
15:00–15:15	Andrey G. Tlatov	Convective flows and the lifetime of sunspots	P
15:15–15:30	<u>Ksenia A. Tlatova</u> and A.G. Tlatov	The Wilson effect according to the analysis of averaged shapes of sunspots in 1919-2022	P
15:30–15:45	<u>Zi-Fan Wang</u> and R.H. Cameron	Flux emergence simulation and atmosphere response at ephemeral region scale	P
15:45–16:00	<u>Mai Yamashita</u> , Y. Itoh, Y. Takagi, and Y. Oasa	Chromospheric activities of pre-main-sequence stars	V
16:00–16:30	Coffee Break		
<i>Chair: Bidya Binay Karak</i>			
16:30–16:45	<u>Nadezhda Zolotova</u> , M.V. Vokhmyanin and R. Arlt	Solar activity reconstruction from the Georg Eimmart's archive of 1616–1720	P
16:45–17:00	<u>Rebecca A. Robinson</u> , M. Carlsson and G. Aulanier	Evolution of a nanoflare-scale magnetic reconnection event in the quiet Sun	P
17:00–17:15	<u>Kiran Jain</u> and S.C. Tripathy	Subsurface Flows in Active Regions with Peculiar Magnetic Configurations	V
17:15–17:30	<u>M. Poisson</u> , M. López Fuentes, C.H Mandrini, F. Grings and P. Démoulin	Modeling LOS magnetograms of emerging active regions	V
17:30–17:45	<u>Varnana M. Kumar</u> , T.E. Girish, Thara N. Sathyan, Haritha V.G. and G. Gopkumar	Super flares in M stars and associated characteristics of active regions and magnetic fields	V
19:00-22:00	Conference Dinner		

Friday, 25 August			
<i>Chair: Jie Jiang</i>			
9:00–9:15	<u>John T. Stefan</u> and A.G. Kosovichev	Properties of Mean Phase Travel Time Deviations Preceding the Emergence of Large Active Regions during Solar Cycle 24	P
9:15–9:30	<u>Hanlin Yang</u> , C. Jin and J. Wang	Secondary flux emergence in ephemeral regions	P
9:30–9:45	<u>Aidar M. Sadykov</u> and S.A. Krasotkin	Magnetic field and radial velocity fluxes at the initial stages of the evolution of solar active regions based on measurements at the photospheric level	P
9:45–10:00	<u>Andrei A. Plotnikov</u> , A.S.Kutsenko and V. I. Abramenko	Decay of unipolar active regions	V
10:00–10:15	<u>Anu B Sreedevi</u> , B.K. Jha, B.B. Karak and D. Banerjee	An automatic algorithm to track bipolar magnetic regions in magnetograms to study the evolution of their properties	P
10:15–10:30	<u>Ruihui Wang</u> , J. Jiang and Y. Luo	A live homogeneous database of solar active regions based on SOHO/MDI and SDO/HMI synoptic magnetograms	P
10:30–11:00	Coffee Break		
Session 6. Miscellaneous (<i>continued</i>)			
<i>Chair: Nathan Kleorin</i>			
11:00–11:15	<u>Ehsan Tavabi</u> and <u>R. Sadeghi</u>	Characterizing Solar Spicules and their Role in Solar Wind Production using Machine Learning and the Hough Transform	P
11:15–11:30	<u>G. G. Motorina</u> , Yu.T. Tsap, J. Kašparová, V.V. Smirnova, A.S. Morgachev and M. Bárta	Modeling of the solar flare chromosphere and thermal sub-THz radiation	V
11:30–11:45	<u>Yuriy T. Tsap</u> , A.V. Stepanov and V.F. Melnikov	Sub-THz emission from stellar flares and energy release diagnostics	V
11:45–12:00	<u>Viacheslav M. Sadykov</u> , I.N. Kitiashvili, A.G. Kosovichev, A.A. Wray, I.K. Asante, and D. Erfani	Physical Properties of the Solar Atmosphere Derived from Comparison of Spectro-Polarimetric SDO/HMI Observables with 3D Radiative MHD Simulations	V
12:00–12:15	Alexander G.M. Pietrow	Center-to-limb variation of spectral lines and continua observed with SST/CRISP and SST/CHROMIS	V
12:15–12:30	<u>Vardan Adibekyan</u> and N.C. Santos	PoET: Mapping the Sun in space and time	P
12:30–14:30	Lunch		

Poster Session

Chair: Egor Illarionov

14:30–16:00	3-minute introductions to the subjects of poster contributions
16:00–16:30	Coffee Break
16:30–17:30	Summary and Closing Ceremony

Posters

1. Solar and Stellar Convection

<u>Prithwitosh Dey</u> , Y. Bekki and L. Gizon	Probing the superadiabaticity of the solar convection zone with inertial modes	P
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2. Differential Rotation and Meridional Circulation

<u>L. Kriskovics</u> , Zs. Kővári, B. Seli, K. Oláh, K. Vida, G.W. Henry, T. Granzer and A. Görgei	Short and long term spot evolution on the subgiant component of EI Eri	P
Zs. Kővári, K. G. Strassmeier, L. Kriskovics, K. Oláh, T. Borkovits, B. Seli and K. Vida	Magnetic activity under tidal influences in the 2+2 hierarchical quadruple system V815 Herculis	P
<u>Daria V. Litvishko</u> , A. S. Kutsenko and V. I. Abramenko	Analysis of differential rotation of anti-Hale active regions	V

3. Global dynamo. Solar and Stellar Activity Cycles

<u>S. Koutchmy</u> , <u>Ehsan Tavabi</u>	Chromosphere activity: relations with Solar cycles (SC)	P
<u>Akash Biswas</u> , P. Kumar, B.B. Karak and R. Cameron	Exploring the predictability of the solar cycle from the polar field rise rate: Results from observations and simulations	P
Anastasiya V. Zhukova	North-South asymmetry of the magnetic fluxes of active regions of different magnetomorphological types in cycles 23 and 24	V
<u>Pawan Kumar</u> , S. Wavhal and B.B. Karak	How supercritical is the solar dynamo?	P
Sergey V. Starchenko and S.V. Yakovleva	Correlation of shifted Wolf numbers with their derivatives, dynamo and predictions	P

5. Local Processes of Magnetic-Flux Emergence. Sunspot and Starspot Formation

Vindya Vashishth and B.B. Karak	Hysteresis near the transition of the large-scale dynamo in presence of the small-scale dynamo	P
Ilan Roth	Flux Emergence Evolution as a Topological Entity	P
Sergey V. Starchenko	The simplest magnetohydrodynamic sunspot model	P

<u>Yuriy A. Fursyak</u> , V.I. Abramenko, A.A. Kutsenko and A.A. Plotnikov	Large-scale electric currents in processes in the solar atmosphere	V
6. Miscellaneous		
<u>Anna M. Görgei</u> , K. Vida, B. Seli and L. Kriskovics	Stellar activity in open clusters	P
<u>Fabian Menezes</u> , A. Valio, Y. Netto, A. Araújo, C. Kay and M. Opher	Trajectories of Coronal Mass Ejection from Solar-type Stars	P
<u>Ehsan Tavabi</u> and R. Sadeghi	Exploring Damping Properties of IRIS Bright Points using Deep Learning Techniques	P
Amaal A. Mohamed	Preliminary results on the flux rope existence of 15 Feb 2011 magnetic cloud event using nonlinear force free-field (NLFFF) model and the observational evidence of its CME deflection by a coronal hole	P
<u>Victoria V. Smirnova</u> , Yu.T. Tsap, G.G. Motorina, A.S. Morgachev and M. Bárta	Thermal instability in the impulsive phase of solar flares with sub-THz component	V
Olga A. Andreeva	Features of the solar minimum 24/25 in the evolution of polar and non-polar coronal holes	V
Sara Said Khodairy	Influence of Solar Activity on LEO Satellites	P
<u>Maria E. Camisassa</u> , R. Raddi, L.G. Althaus, J. Isern, A. Rebassa-Mansergas, S. Torres, A.H. Córscico and L. Korre	The dynamo magnetic fields in ultra-massive white dwarfs	P
Sergey V. Starchenko	Levels of stabilization of velocity and magnetic induction in the convective zone of the Sun	P
<u>K. Vida</u> , B. Seli, T. Szklenár, L. Kriskovics and A. Görgei	Detecting coronal mass ejections with machine learning methods	P