

**International Astronomical Union Symposium 328**

**Living around Active Stars**

**17-21 October, 2016**

**Maresias, Brazil**

**Meeting Report**

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2. Summary of the scientific highlights of the meeting
3. List of participants and participants statistics
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IAUS 328  
**LIVING AROUND ACTIVE STARS**

17-21 October, 2016  
Maresias, Brazil

**PROGRAM OVERVIEW**

Time (Hrs)	Sunday 16 October	Monday 17 October	Tuesday 18 October	Wednesday 19 October	Thursday 20 October	Friday 21 October
<b>0900–1030</b>	Arrival of Participants	Session1A	Session 1E	Flash Poster	Session 3B	Session 4B
<b>1030–1100</b>		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
<b>1100–1230</b>		Session 1B	Session 2A	Session 3A	Session 3C	Session 4C
<b>1230–1400</b>		Lunch	Lunch	Lunch	Lunch	Lunch
<b>1400–1530</b>		Session 1C	Session 2B	Free time for conference excursion	Session 3D	Session 4D
<b>1530–1600</b>		Coffee Break	Coffee Break		Coffee Break	Coffee Break
<b>1600–1730</b>		Session 1D	Session 2C		Session 4A	Closing
<b>1900–2000</b>	Registration	Poster Session	Poster Session		Poster Session	Posters Down
<b>2000–2200</b>	Reception	Dinner	Dinner	Dinner	Dinner	
<b>2100–2300</b>				Luau		

Session 1: Solar and Stellar Activity  
Session 2: Heliospheric and Astrospheric Environments  
Session 3: Coupled Star-Planet Evolution  
Session 4: Exoplanets, Habitability and Life  
Flash Poster: Rapid Overview of all Poster Presentations

## DETAILED SCIENTIFIC PROGRAM

### **Conference Opening**

*SOC Chair (Dibyendu Nandi) and LOC Chair (Adriana Valio)*  
*08:30, Monday, 17 October, 2016*

### **Session 1: Solar and Stellar Activity**

*Convener: Allan Sacha Brun*  
*(Monday 0900 to Tuesday 1030)*

<i>Time</i>	<i>Speaker</i>	<i>Title</i>	<i>Status</i>
<b>Monday, 17 October</b>		<b>1a: Solar-Stellar Magnetism</b>	
9:00-9:30	A. Strugarek	The puzzling dynamo of stars: recent progress with global numerical simulations	I
9:30-9:45	R. Yadav	Dynamo simulations for fully convective M stars	C
9:45-10:00	Bonnie Romano Zaire	How does the internal structure of young stars determine their magnetic topology?	C
10:00-10:15	R. Roettenbacher	Imaging Global Stellar Magnetism to Shift the Starspot Paradigm	C
10:15-10:30	Moderator	Discussion	C
10:30-11:00	COFFEE BREAK	COFFEE BREAK	
		<b>1b: Solar-Stellar Radiative Variability</b>	

11:00-11:30	A. Shapiro	Connecting solar and stellar brightness variations	I
11:30-11:45	I. Busa	A new pressure component in the chromosphere of active stars?'	C
11:45-12:00	S. de Souza e Almeida Silva	Influence of different heat flux formulations on the thermal evolution of a solar active region	C
12:00-12:15	Andreas Quirrenbach	M Dwarfs and their Planets - First Results from CARMENES	C
12:15-12:30	Moderator	Discussion	
12:30-14:00	LUNCH BREAK	LUNCH BREAK	
		<b>1c: Activity Extremes and Super Flares</b>	
14:00-14:30	H. Maehara	Starspot activity and superflares on solar-type stars	I
14:30-14:45	J. Carlo Santos	Spectral behavior of photospheric magnetic field during solar flares	C
14:45-15:00	C. Alastair	Magnetic activity of interacting binaries	C
15:00-15:15	Moderator	Discussion	
15:15-15:45	COFFEE BREAK	COFFEE BREAK	
		<b>1d: Solar-Stellar Connection</b>	
15:45-16:00	G. Guerrero	Are tachoclines important for solar and stellar dynamos?	C
16:00-16:15	S. Mahajan	Can Torsional Oscillations Indicate the Location of Stellar Magnetic Field Production?	C
16:15-16:30	A. Valio	Starspots properties and stellar activity from planetary transits	C
16:30-16:45	Raissa de Lourdes Freitas Estrela	Using planetary transits to estimate magnetic cycles of Kepler stars	C

16:45-17:00	Sudeshna Boro Saika	A solar-like magnetic cycle for the K dwarf 61 Cyg A	C
17:00-17:15	Constance emirau-Viard	Dynamo Action and Magnetic Activity during the pre-main sequence: influence of rotation and structural changes	
17:15-17:30	Moderator	Discussion	
<b>Tuesday, 18 October</b>		<b>1d: Solar-Stellar Connection</b> (Continued)	
9:00-9:30	L. Jouve	What do numerical simulations tell us about the solar and stellar dynamos?	I
9:30-9:45	Maria Ann Weber	Simulations of Magnetic Flux Emergence in Cool Star Interiors	C
9:45-10:00	Sarah Gibson	Beyond Sunspots: Studies Using a Newly Digitized Archive of Global Solar Magnetic Field Patterns	C
10:00-10:15	C. James Marvin	Measurements of absolute Calcium II H and K flux for M dwarfs	C
10:15-10:30	Moderator	Discussion	
10:30-11:00	COFFEE BREAK	COFFEE BREAK	

## ***Session 2: Heliospheric and Astrospheric Environments***

*Convener: Aline Vidotto  
(Tuesday 1100 to 17:30)*

<i>Time</i>	<i>Speaker</i>	<i>Title</i>	<i>Status</i>
<b>Tuesday, 18 October</b>		<b>2A: Solar and Stellar Coronae and Winds</b>	
11:00-11:30	Moira Jardine	Solar and Stellar Coronae and Winds	I
11:30-11:45	Carolina Villarreal D'Angelo	On the influence of magnetic fields in a neutral planetary wake	C
		<b>2B: Interplanetary Storm and Energetic Particles</b>	
11:45-12:00	Heidi Korhonen	Hunting for Stellar Coronal Mass Ejections	C
12:00-14:00	LUNCH BREAK	LUNCH BREAK	
		<b>2c, d. Forcing of Planetary Atmospheres and Magnetospheres; Space Climate Consequences</b>	
14:00-14:30	Anil Bhardwaj	Influence of Solar Weather on Planetary Environments	I
14:30-14:45	Christopher T. Russell	Carrington-Class Events and How to Recognize Them	C
14:45-15:00	Janet Luhmann	Space Weather Storm Responses at Mars	C
15:00-15:30	Colin Johnstone	Forcing of Planetary Atmospheres and Magnetospheres	I
15:30-16:00	COFFEE BREAK	COFFEE BREAK	
16:00-16:15	A. S. Brun	Exo Space Weather	C
16:15-16:45	Pablo Mauas	Solar activity forcing of terrestrial hydrological phenomena	I
16:45-17:15	Moderator	Discussion	

### **Session 3: Coupled Star-Planet Evolution**

Convener: Heidi Korhonen

(Wednesday 1100 to Thursday 1530)

<i>Time</i>	<i>Speaker</i>	<i>Title</i>	<i>Status</i>
<b>Wednesday 19 October</b>		<b>3a</b>	
11:00-11:30	Eiichiro Kokubo	Formation of Planetary Systems	I
11:30-11:45	Louise Fey Yu	Hunting for hot Jupiters around young active stars,	C
11:45-12:00	Pascal Petit	A maximum-entropy approach to detect hot Jupiters around young main sequence Sun-like stars	C
12:00-12:15	Heidi Korhonen	Discussion	
12:15-14:00	LUNCH BREAK	LUNCH BREAK	
<b>Thursday 20 October</b>		<b>3b</b>	
09:00-09:30	Scott G. Gregory	The long-term evolution of stellar activity	I
09:30-09:45	Dibyendu Nandi	Solar-Stellar Magnetic Variability over Different Timescales	C
09:45-10:00	Jorge Melendez	New relations between rotation, activity and age in Sun-like stars	C
10:00-10:30	Nicholas James Nelson	Stellar Midlife Crises: Sharp Changes in Dynamo Action for Sun-like Stars Near the Solar Rotation Rate	I, Metcalf Lecturer
10:30-11:00	COFFEE BREAK	COFFEE BREAK	
<b>Thursday 20 October</b>		<b>3c</b>	

11:00-11:15	Sudeshna Boro Saikia	Goettingen chromospheric activity database: Long term activity vs rotation of cool stars	C
11:15-11:30	Scott Wolk	Observed Effects of Star-Planet Interaction	C
11:30-11:45	Andrew Collier Cameron	Tidal sculpting in the hot-Jupiter mass-separation diagram	C
11:45-12:00	Pascal Petit	Discussion	
12:00-14:00	LUNCH BREAK	LUNCH BREAK	
		<b>3d</b>	
14:00-14:30	Stephen Marsden	The Early, Young and Active Sun	I
14:30-14:45	Colin Alastair Hill	Magnetic Fields of Weak-Line T Tauri Stars	C
14:45-15:00	Theresa Lueftinger	Cool stars magnetic fields and their influence on the habitability of surrounding planets	C
15:00-15:15	Heidi Korhonen	Discussion	



## ***Session 4: Exoplanets, Habitability and Life***

*Convener: Dibyendu Nandi  
(Thursday 1600 to Friday 1530)*

<i>Time</i>	<i>Speaker</i>	<i>Title</i>	<i>Status</i>
<b>Thursday 20 October</b>		<b>4a</b>	
15:45-16:15	Manuel Guedel	Astrophysical Environments and the Origin of Life	I
16:15-16:30	Ximena Abrevaya	Astrobiology, Stellar Radiation and the Quest of Life	C
16:30-16:45	Mekhi Dhesi	Twinkle - A Low Earth Orbit Visible and Infrared Exoplanet Spectroscopy Observatory' instead of just 'TWINKLE'	C
16:45-17:15	Petrus Martens	Discussions	C
<b>Friday 21 October</b>		<b>4b</b>	
09:00-09:30	Vladimir Airapetian	The Environment of the Young Earth in the Perspective of the Young Sun	I
09:30-09:45	Petrus Martens	The Faint Young Sun and Faint Young Stars Paradox	C
09:45-10:00	Aline Vidotto	The effects of M dwarf magnetic fields and winds on potentially habitable planets	C
10:00-10:15	Fabio Del Sordo	Estimating sizes of ExoEarth Magnetospheres	C
10:15-10:30	Dibyendu Nandi	Discussions	
10:30-11:00	COFFEE BREAK	COFFEE BREAK	
		<b>4c</b>	
11:00-11:30	Ricky Egeland	Evolution of Chromospheric Activity in Solar	I,

		Analogs	Metcalf Lecturer
11:30-11:45	Joe Llama	The Impact of Stellar Activity on High Energy Exoplanet Transits	C
11:45-12:00	Patricia Cruz	Detection of Secondary Eclipses of WASP-10b and QATAR-1b in the Ks-Band	C
12:00-12:15	Adriana Valio	Discussions	C
12:15-14:00	LUNCH BREAK	LUNCH BREAK	
		<b>4c</b>	
14:00-14:30	José-Dias do Nascimento Jr.	The Solar Proxy k1 ceti and the Planetary Habitability of the Young Sun when Life arose on Earth	I
14:30-14:45	Kristina Kislyakova	Electromagnetic induction heating of planetary interiors in the habitable zones of active stars	C
14:45-15:00	Subhanjoy Mohanty	Habitability of Terrestrial-Mass Planets in the HZ of M Dwarfs: H/He Dominated Atmospheres	C
15:00-15:30	Dibyendu Nandi	Discussions	C
15:30-16:00	COFFEE BREAK	COFFEE BREAK	
16:00-17:30	SOC, LOC	Closing Session	

## poster

num	Title	area	Speaker	Autors
1	Responses of low-latitude D layer ionosphere to solar flares in 2014	Heliospheric and Astrospheric Environments	Tran Quoc Ha	<a href="#">Tran Quoc Ha</a>
2	Dynamical Complex Systems in Stars	Exoplanets, habitability and life	Diego Sebastian Mahecha	<a href="#">Diego Sebastian Mahecha</a>
3	Searching for orbital decay in short-period transiting planets around active stars	Exoplanets, habitability and life	Jorge Emiliano Jofre	<a href="#">Jorge Emiliano Jofre</a> , Romina Petrucci, Mercedes Gomez, Pablo Mauas Luiz Angelo Berni, Luis Eduardo Vieira, Graziela da Silva Savonov, <a href="#">Alisson Dal Lago</a> , Miriam Nishimori, Odim Mendes, Marlos Rockenbach da Silva, Fernando Guarnieri, Marcelo Sampaio, Maria Jose Barbosa, José Vitor de Vilas Boas, Renato Henrique Ferreira Branco, Ligia Alves da Silva, Franciele Carlesso, Jenny Rodriguez, Livia Ribeiro Alves, Bruno Vaz Castilho, Jesulino dos Santos, Alessandro da Silva Paula, Flavia Cardoso <a href="#">Franciele Carlesso</a> , Luiz Angelo Berni, Graziela da Silva Savonov, Luis Eduardo Antunes Vieira, Alisson Dal Lago, Miriam Nishimori, Edson Luiz de Miranda, Greg Kopp
4	Brazilian TSI Radiometer Project	Other	Alisson Dal Lago	<a href="#">Yuri Netto</a> , Luciano Silva, Adriana Valio
5	Nickel-Phosphorous Development for Total Solar Irradiance Measurement	Other	Franciele Carlesso	<a href="#">Yuri Netto</a> , Luciano Silva, Adriana Valio
6	Differential rotation of stars with multiple transiting planets	Solar and Stellar Activity	Yuri Netto	<a href="#">Yuri Netto</a> , Luciano Silva, Adriana Valio
7	Studies of Synoptic Solar Activity using Kodaikanal Ca K Data	Solar and Stellar Activity	Kuttickat Paul Raju	<a href="#">Kuttickat Paul Raju</a>
8	SOLAR RADIUS AT SUBTERAHERTZ FREQUENCIES	Solar and Stellar Activity	Fabian Marcel Menezes	<a href="#">Fabian Marcel Menezes</a> , Adriana Valio
9	Understanding sunspot formation using Implicit Large-Eddy simulations	Solar and Stellar Activity	Francisco Javier Camacho Rodriguez	<a href="#">Francisco Javier Camacho Rodriguez</a> , Gustavo Andres Guerrero Eraso
10	Contribution of secondary particles for radio spectra in solar flares	Solar and Stellar Activity	Jordi Tuneu	<a href="#">Jordi Tuneu</a> , Sérgio Szpigel, Guillermo Giménez de Castro, Alexander MacKinnon
11	Connecting Io's volcanic activity to the Io plasma torus: comparison of Galileo/NIMS volcanic and ground-based torus observations	Heliospheric and Astrospheric Environments	Fabiola Pinho Magalhaes	<a href="#">Fabiola Pinho Magalhaes</a> , Walter D. Alarcon Gonzalez, Mariza Pereira Echer, Ezequiel Echer, Rosaly Lopes, Jeffrey Morgenthaler, Julie Rathbun
12	LOW-MASS ECLIPSING	Solar and	Patricia Cruz	<a href="#">Patricia Cruz</a> , Marcos Diaz, Jayne

	BINARIES IN THE WFCAM TRANSIT SURVEY	Stellar Activity		Birkby , David Barrado
13	The impact of the space weather effects on the stratosphere-troposphere of the southern hemisphere	Other	Ligia Alves Da Silva	<u>Ligia Alves Da Silva</u> , Prakki Satyamurty , Livia Ribeiro Alves , Vitor M. Souza , Paulo R. Jauer , Marcos V. Silveira , Mariza S. Echer , Claudia Medeiros , José Paulo Marchezi , Marlos Rockenbach , Odin Mendes Jr. , Alisson Dal Lago , Luis Eduardo Vieira <u>Marlos Rockenbach</u> , Vinicius Deggeroni , Ligia Alves da Silva , Livia Ribeiro Alves , Vitor M. Souza , Paulo R. Jauer , Marcos Vinicius Silveira , Claudia Medeiros , José Paulo Marchezi , Odin Mendes Jr. , Alisson Dal Lago , Luis Eduardo Vieira
14	Van Allen Radiation Belt Electron Flux During Intense Geomagnetic Storms	Solar and Stellar Activity	Marlos Rockenbach	<u>Marlos Rockenbach</u> , Vinicius Deggeroni , Ligia Alves da Silva , Livia Ribeiro Alves , Vitor M. Souza , Paulo R. Jauer , Marcos Vinicius Silveira , Claudia Medeiros , José Paulo Marchezi , Odin Mendes Jr. , Alisson Dal Lago , Luis Eduardo Vieira
15	ATMOSPHERIC PARAMETERS, LUMINOSITIES AND AGES OF NEARBY M-DWARFS - A REAPPRAISAL OF HABITABLE ZONES	Other	Gustavo Frederico Porto de Mello	<u>Gustavo Frederico Porto de Mello</u> , Riano Escate-Giribaldi , Diego Lorenzo-Oliveira , Nathália Paes Leme
16	SPECTRAL ANALYSIS OF MAGNETOSPHERIC ULF WAVES OBSERVED AFTER TWO INTERPLANETARY SHOCKS	Other	Livia Ribeiro Alves	<u>Livia Ribeiro Alves</u> , José Paulo Marchezi , Ligia Alves da Silva , Odin Mendes , Claudia Medeiros , Vitor M. Souza , Paulo R. Jauer , Luis E. A. Vieira , Marlos Rockenbach , Alisson dal Lago <u>André Chicrala</u> , Renato Sergio Dallaqua , Luis Eduardo Antunes Vieira , Alisson Dal Lago , Jenny Marcela Gomez Rodriguez , Judith Palacios , Tardelli Ronan Coelho Stekel , Joaquim Eduardo Rezende Costa , Marlos da Silva Rockenbach
17	Evolution of the Active Region NOAA 12443 based on magnetic field extrapolations	Solar and Stellar Activity	André Chicrala	<u>Rafael R. S. de Mendonça</u> , Carlos R. Braga , Ezequiel Echer , Alisson Dal Lago , Marlos Rockenbach , Nelson J. Schuch , Kazuoki Munakata , Chihiro Kato , Masayoshi Kozai , Takao Kuwabara
18	Observation of 45 years solar cycle modulation in the cosmic ray intensity observed by the Nagoya muon detector	Solar and Stellar Activity	Rafael R. S. de Mendonça	<u>Williamary Portugal</u> , Ezequiel Echer , Mariza Pereira de Souza Echer , Alessandra Abe Pacini
19	A Study about the effects of solar variability on the Earth's climate during Forbush Decrease and Ground Level Enhancement events	Coupled Star-Planet evolution	Williamary Portugal	<u>Adriane Marques de Souza</u> , Ezequiel Echer , Maurício José Alves Bolzam , Markus Fraenz
20	A study on Electron Oscillations in the Magnetosheath of Mars with Mars Express observations	Heliospheric and Astrospheric Environments	Adriane Marques de Souza	<u>Pierre Kaufmann</u>
21	Recent results on solar activity in	Solar and	Pierre	

	the THz range of frequencies	Stellar Activity	Kaufmann	
22	Extreme solar-terrestrial events	Heliospheric and Astrospheric Environments	Alisson Dal Lago	<u>Alisson Dal Lago</u> , Luis Eduardo Antunes Vieira , Ezequiel Echer , Marlos Rockenbach , Walter Gonzalez
23	COHERENT SYNCHROTRON RADIATION IN LABORATORY ACCELERATORS AND THE DOUBLE-SPECTRAL FEATURE IN SOLAR FLARES	Solar and Stellar Activity	Wellington Cruz	Sergio Szpigel , <u>Wellington Cruz</u> , Pierre Kaufmann , Jean-Pierre Raulin , Michael Klopff
24	THE BEHAVIOR OF THE SPOTLESS ACTIVE REGIONS DURING THE SOLAR MINIMUM 23-24	Solar and Stellar Activity	Alexandre José de Oliveira e Silva	<u>Alexandre José de Oliveira e Silva</u> , Caius Lucius Selhorst
25	The influence of eclipses in the stellar radio emission	Solar and Stellar Activity	Caius Lucius Selhorst	<u>Caius Lucius Selhorst</u> , Adriana Valio
26	Comparing methods to derive the direction of propagation of coronal mass ejections	Solar and Stellar Activity	Carlos Roberto Braga	<u>Carlos Roberto Braga</u> , Rafael Rodrigues Souza de Mendonça , Alisson Dal Lago , Ezequiel Echer
27	Spectral Analyses Applied to Jovian Dust Stream data	Heliospheric and Astrospheric Environments	Mariza Pereira de Souza Echer	<u>Mariza Pereira de Souza Echer</u> , Ezequiel Echer , Fabiola Pinho Magalhães , Walter Demetrio Gonzalez
28	ANALYSIS OF KEPLER-71 ACTIVITIES THROUGH PLANETARY TRANSIT	Solar and Stellar Activity	Eber Aparecido Gusmão	<u>Eber Aparecido Gusmão</u> , Caius Lucius Selhorst , Alexandre Soares Oliveira
29	Analysis of the morphological structures of comet 1P/Halley in 1910 and 1986	Other	Marcos Rincon Voelzke	<u>Marcos Rincon Voelzke</u>
30	Extremophile microorganisms of the xerophytic region of La Tatacoa ( Villavieja , Huila - Colombia ), with nitrogen fixation activity and solubilization of phosphate; and its possible applications astrobiology.	Exoplanets, habitability and life	Rosa Alejandra Reyes	<u>Rosa Alejandra Reyes</u> , Luisa Mejía , David Ballesteros , Leidy Gonzalez , Alexis Infante , Gina Castillo , Lorena Miranda , Alejandra Rodriguez , Hermes Bolivar , Pablo Tamayo , Jorge Torres , Javier Suárez , Yael Méndez , María Leal , Elkin Ruiz , Jimena Sánchez
31	Interaction of extrasolar planets with their host star	Exoplanets, habitability and life	Adriana Valio	Douglas Félix da Silva , <u>Adriana Valio</u>
32	A large catalog of young active RAVE stars in the Solar neighbourhood	Solar and Stellar Activity	Maru\ v sa \v Zerjal	<u>Maru\ v sa \v Zerjal</u> , Toma\ v z Zwitter , Gal Matijevi\ v c , RAVE Collaboration
33	Formation of outflowing discs around Be stars caused by stochastic ejections of matter from stellar surface	Solar and Stellar Activity	Despina Panoglou	<u>Despina Panoglou</u> , Alex Cavalieri Carciofi
34	The age-chromospheric activity relation using solar twins	Solar and Stellar Activity	Fabício Catani Freitas	<u>Fabício Catani Freitas</u> , Jorge Melendez
35	Current status of development of the Brazilian Experimental Solar Telescope	Solar and Stellar Activity	Luis Eduardo Antunes Vieira	<u>Luis Eduardo Antunes Vieira</u> , Alisson Dal Lago , Braulio Albuquerque , Bruno Castilho , Fernando L Guarnieri , Flavia R

Cardoso , Gustavo Guerrero ,  
 Jenny Marcela Rodríguez ,  
 Jesulino Santos , Joaquim E R  
 Costa , Judith Palacios , Ligia  
 Alves da Silva , Livia Ribeiro  
 Alves , Lucas L. Costa , Marcelo  
 Sampaio , Marcos V Dias Silveira ,  
 Margarete Oliveira Domingues ,  
 Marlos Rockenbach , Maria C.O.  
 Aquino , Maria Cristina R Soares ,  
 Maria J Barbosa , Odim Mendes ,  
 Paulo Ricardo Jauer , Renato  
 Branco , Renato Dallaqua , Tardelli  
 Ronan Coelho Stekel , Varlei E  
 Menconi , Vitor Moura Cardoso  
 Cardoso e Silva Souza , Walter  
 Gonzalez

36	How to make the Sun look less like the Sun and more like a star?	Heliospheric and Astrospheric Environments	Aline A Vidotto	<u>Aline A Vidotto</u>
37	Solar Wind, Earthly Clouds	Heliospheric and Astrospheric Environments	Clarisse Monteiro Fernandes	<u>Clarisse Monteiro Fernandes</u> , Alexandre Humberto Andrei
38	Magnetic Dynamo Cycles in Cool Single Dwarfs	Solar and Stellar Activity	Steven H. Saar	<u>Steven H. Saar</u>
39	CME Rate Saturation Due to Dominance of Global Poloidal Magnetic Topology	Heliospheric and Astrospheric Environments	Steven H Saar	<u>Steven H Saar</u> , Ofer Cohen , Rakesh Yadav
40	Exploring the dust environment in the inner heliosphere and its interaction with the solar wind	Heliospheric and Astrospheric Environments	Leela Elise O'Brien	<u>Leela Elise O'Brien</u> , Zoltan Sternovsky , Mihaly Horanyi , Eberhard Grun , Antal Juhasz
41	Simulating the corona of a rapidly rotating fully convective star	Solar and Stellar Activity	Rakesh K. Yadav	<u>Rakesh K. Yadav</u> , Ofer Cohen , Cecilia Garraffo , Steve Saar , Scott J. Wolk , Vinay Kashyap
42	PhD	Solar and Stellar Activity	Jose Eduardo Mendoza	<u>Jose Eduardo Mendoza</u> , José Enrique Pérez
43	A study on Electron Oscillations in the Magnetosheath of Mars with Mars Express observations	Heliospheric and Astrospheric Environments	Adriane Marques de Souza	<u>Adriane Marques de Souza</u> , Ezequiel Echer , Mauricio José Alves Bolzam , Markus Fraenz
44	Solar and Stellar Coronae and Winds	Heliospheric and Astrospheric Environments	Maira Jardine	<u>Maira Jardine</u>

45	Rossby numbers of fully convective and partially convective stars	Solar and Stellar Activity	Natália Rezende Landin	<u>Natália Rezende Landin</u> , Luiz Themystoklitz Sanctos Mendes
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## **International Astronomical Union Symposium 328**

### **Living around Active Stars**

**17-21 October, 2016**

**Maresias, Brazil**

### **Scientific Highlights**

The IAUS 328, entitled Living around Active Stars was held in Maresias, Brazil from 17-21 October, 2016. The meeting was motivated from the perspective of understanding active stars such as the Sun and their impact on their surrounding astrospheres and planets, including climate and habitability. The scientific program was broadly structured along the following themes:

1. Solar and Stellar Activity
2. Heliospheric and Astrospheric Environments
3. Coupled Star-Planet Evolution
4. Exoplanets, Habitability and Life

The highlights from the meeting include recent results on dynamo simulations of solar-like stars and fully convective stars. In particular it was noted that full MHD simulations are now capable of reproducing stellar magnetic field reversals and cycles and that strong fields can be built up in fully convective stars as well. The necessity of a tachocline, or lack thereof, for stellar magnetic dynamos was debated and it appears that there is no consensus yet on this issue. Improved techniques to detect stellar magnetic fields are inferring large stellar spots with a propensity to be present at high latitudes. How are such large spots generated and maintained is a question that requires focussed theoretical investigations.

Some presentations highlighted attempts to incorporate starspots in dynamo simulations, while others discussed the role of star-spot size distribution and their impact of stellar super-flares. In spite of dedicated detection efforts, the rarity of solar-like magnetic cycles and coronal mass ejections in other stars continue to intrigue. The crucial roles played by surface magnetic field topology in determining the structure of stellar coronae and governing stellar winds were highlighted. Efforts to understand the activity of the young Sun seem to be confounded by the fact that a very young solar-like star may have a wide distribution in activity levels! Is this related to the spread in rotation rates of very young solar-like stars and how does one then pin down the exact solar rotation and activity during the very early years of its life? These questions came up during this Symposium and answers to these have implications for coupled star-planet evolution and habitable environments around young active stars.

Stellar activity-rotation or activity-Rossby number relationship inferred from chromospheric activity indices and X-ray flux were discussed. The former does not show the activity saturation that is seen in X-rays. Is there any change in the mode of dynamo operation near Rossby number one? Is the Böhm-Vitense gap real? More and more stellar observations seem to be filling up this gap. The resolutions to these intriguing questions have important implications for dynamo action and the evolution of stellar activity.



Recent results related to Nitrogen photochemistry in the early Earth's atmosphere and its possible role in resolving the faint young Sun paradox was presented. The fact that of the many known exoplanets, we have been able to detect atmospheres in only a handful is somewhat discouraging. It is expected that with improved spectroscopic sensitivities this issue may be resolved in the future leading to a better understanding of planetary atmospheres and their interactions with stellar ejecta and radiation.

While these highlights do not cover the full breadth of scientific presentations, they are nonetheless indicative of the richness and diversity of the Symposium topic and the exciting times of discovery that await us.

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**List of Participants and Participants Statistics**

The IAU Symposium, Living around Active Stars had a total of 81 participants, 23 of them being graduate students. The participants came from 19 different countries, including 40 participants from 4 Latin American countries (Argentina, Brazil, Colombia and Mexico).

As for the gender distribution, the IAU Symposium 328 was attended by 31 women, i.e., 38% of the total (orange in Figure 1). Of the contributed talks 59% were by women and of the invited talks 20% were by women.

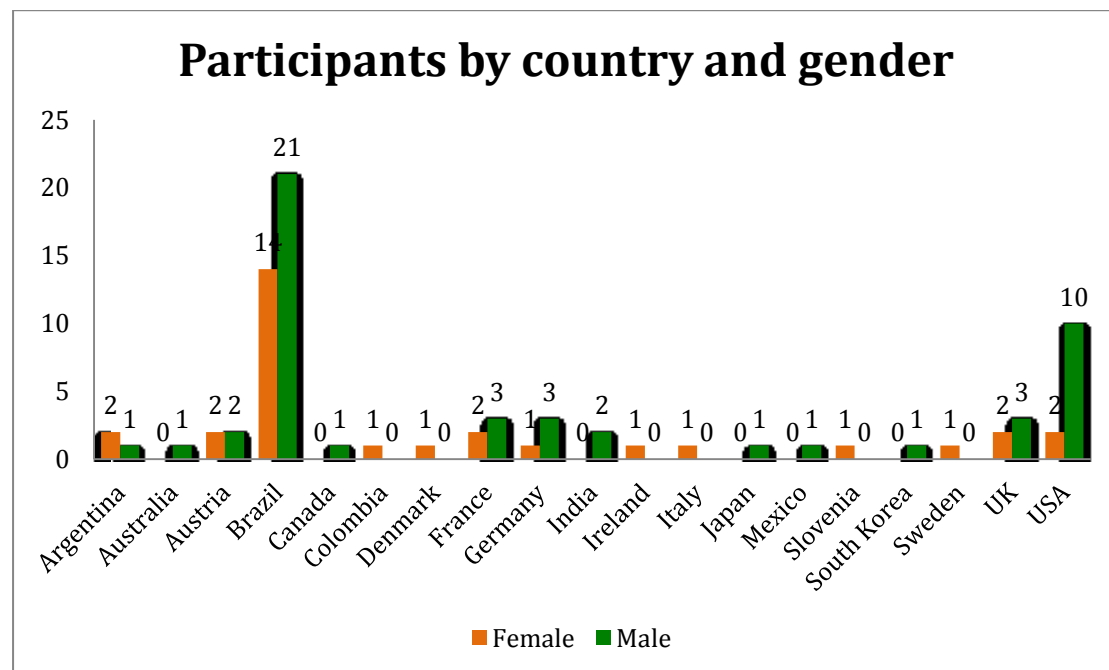


Figure 1: Attendee by country and gender.

## List of Participants

Name	Last name	Institution	Country
Abrevaya	Ximena	IAFE - UBA - CONICET	Argentina
Carolina S.	Villarreal D'Angelo	IATE	Argentina
Pablo	Mauas	Instituto de Astronomía y Física del Espacio	Argentina
Stephen	Marsden	University of Southern Queensland	Australia
Kristina	Kislyakova	Space Research Institute, Austrian Academy of Sciences, Graz, Austria	Austria
Lueftinger	Theresa	Department of Astrophysics	Austria
Colin	Johnstone	Department of Astrophysics, University of Vienna	Austria
Manuel	Guedel	University of Vienna	Austria
Adriana	Valio	Universidade Presbiteriana Mackenzie	Brazil
Adriane	de Souza	INPE	Brazil
Amanda	Mesquita	Instituto Nacional de Pesquisas Espaciais	Brazil
Lúcia	Zaire	UFMG	Brazil
Bonnie			
Clarisse	Monteiro Fernandes	ON/MCT	Brazil
Fabiola	Magalhaes	INPE	Brazil
Franciele	Carlesso	National Institute for Space Research (INPE)	Brazil
Jenny	Rodríguez Gómez	National Institute for Space Research (INPE)	Brazil
Marcela			
LIGIA ALVES	DA SILVA	INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS	Brazil
Natália	Landin	Universidade Federal de Viçosa - campus UFV Florestal	Brazil
Rezende			
Patricia	Cruz	IAG/USP	Brazil
Raissa	Estrela	Universidade Prebisteriana Mackenzie	Brazil
Suzana	S. A. Silva	INPE	Brazil
Williamary	Portugal	INPE - National Institute for Space Research	Brazil
Alexandre	Oliveira e Silva	UNIVAP - Universidade do Vale do Paraíba	Brazil
Alisson	Dal Lago	Instituto Nacional de Pesquisas Espaciais	Brazil
André	Chicrala	Instituto Nacional de Pesquisas Espaciais	Brazil
Caius	Selhorst	UNIVAP - Universidade do Vale do Paraíba	Brazil
Carlos	Braga	Instituto Nacional de Pesquisas Espaciais	Brazil
Roberto			
Dirceu Yuri	Netto	UPM - Universidade Presbiteriana Mackenzie	Brazil

Fabian	Menezes	Universidade Presbiteriana Mackenzie	Brazil
Fabício	Freitas	IAG	Brazil
Francisco	Camacho Rodriguez	Universidade Federal de Minas Gerais	Brazil
Gustavo	Porto de Mello	UFRJ - Universidade Federal do Rio de Janeiro	Brazil
Gustavo	Guerrero	Universidade Federal de Minas Gerais	Brazil
JEAN	SANTOS	UNIVERSIDADE TECNOLÓGICA FEDERAL DO PARANÁ	Brazil
Jordi	Tuneu	Universidade Presbiteriana Mackenzie	Brazil
Jorge	Melendez	Universidade de São Paulo	Brazil
José Dias	do Nascimento Junior	UFRN - Universidade Federal do Rio Grande do Norte	Brazil
Luis Eduardo	Vieira	Instituto Nacional de Pesquisas Espaciais	Brazil
Marcos	Voelzke	UNICSUL - Universidade Cruzeiro do Sul	Brazil
Marlos Rockenbach	Silva	INPE	Brazil
Pierre	Kaufmann	UPM - Universidade Presbiteriana Mackenzie	Brazil
Rafael	Mendonça	INPE	Brazil
Wellington	Cruz	Centro de Radioastronomia e Astrofísica Mackenzie	Brazil
Antoine	Strugarek	Université de Montréal	Canada
Rosa Alejandra	Reyes	Universidad Nacional de Colombia	Colombia
Heidi	Korhonen	DARK, Niels Bohr Institute, University of Copenhagen	Denmark
Constance	Emeriau-Viard	CEA/DSM/IRFU/SAP	France
Laurene	Jouve	IRAP Toulouse	France
Allan Sacha	BRUN	CEA-Saclay, AIM	France
Colin	Hill	IRAP / OMP / University of Toulouse	France
Pascal	Petit	IRAP / OMP	France
Sudeshna	Boro Saikia	Institute for Astrophysics, University of Goettingen	Germany
Alexander	Shapiro	Max-Planck-Institut für Sonnensystemforschung	Germany
Andreas	Quirrenbach	Landessternwarte Heidelberg	Germany
Christopher	Marvin	IAG, University of Goettingen	Germany
Dibyendu	Nandi	Center of Excellence in Space Sciences India, IISER Kolkata	India
Raju Paul	Kuttickat	Indian Institute of Astrophysics, Bangalore	India
Aline	Vidotto	Trinity College Dublin, the University of Dublin	Ireland
Innocenza	Busa	INAF - OACatania	Italy

Hiroyuki	Maehara	National Astronomical Observatory of Japan, NINS	Japan
Jose Eduardo Marusa	Mendoza Torres	INAOE	Mexico
	Zerjal	University of Ljubljana	Slovenia
YONG-IK	BYUN	Yonsei University	South Korea
Rachael	Roettenbacher	Stockholm University	Sweden
Mekhi	Dhesi	Blue Skies Space Ltd. / University College London	United Kingdom
Moira	Jardine	University of St Andrews	United Kingdom
Andrew	Collier Cameron	University of St Andrews	United Kingdom
Scott	Gregory	University of St Andrews	United Kingdom
SUBHANJO Y	MOHANTY	IMPERIAL COLLEGE LONDON	United Kingdom
Janet	Luhmann	Space Sciences Lab, University of California	USA
Sarah	Gibson	NCAR/HAO	USA
Christopher	Russell	University of California, Los Angeles	USA
Fabio	Del Sordo	Yale / NORDITA	USA
Joseph	Llama	Lowell Observatory	USA
Nicholas	Nelson	California State University, Chico	USA
Petrus	Martens	Dept. of Physics and Astronomy, Georgia State University	USA
Rakesh	Yadav	Harvard-Smithsonian Center for Astrophysics	USA
Ricky	Egeland	High Altitude Observatory/Montana State University	USA
Scott	Wolk	Harvard-Smithsonian Center for Astrophysics	USA
Sushant	Mahajan	Georgia State University	USA
Vladimir	Airapetian	NASA Goddard Space Flight Center	USA

**IAU Grant Recipients****IAU Symposium 328: Living around Active Stars****17-21 October, 2016****Maresias, Brazil**

<b>Family Name</b>	<b>First Name</b>	<b>Gender</b>	<b>Citizen</b>	<b>Grant (Euro)</b>
Abrevaya	Ximena Celeste	F	Argentina	970
Busa	Innocenza	F	Italy	1000
Estrela	Raissa Freitas	F	Brazil	367
Hill	Colin Alastair	M	UK	870
Magalhaes	Fabiola Pinho	F	Brazil	425
Raju	Kuttickat Palil	M	India	1000
Romano Zaire	Bonnie	F	Brazil	485
Simplicio Netto	Dirceu Yuri	M	Brazil	360
Tuneu	Jordi	M	Spain	635
Villarreal D' Angelo	Carolina Susana	F	Argentina	820
Yadav	Rakesh Kumar	M	India	1000
<b>TOTAL</b>				<b>7932</b>

## **International Astronomical Union Symposium 328**

### **Living around Active Stars**

**17-21 October, 2016**

**Maresias, Brazil**

### **Executive Summary**

The International Astronomical Union Symposium 328, Living around Active Stars, was held in Maresias, Brazil from 17-21 October, 2016. The variable activity of stars such as the Sun is mediated via stellar magnetic fields, radiative and energetic particle fluxes, stellar winds and magnetic storms. This activity influences planetary atmospheres, climate and habitability. Studies of this intimate relationship between the parent star, its astrosphere (i.e., the equivalent of the heliosphere) and the planets that it hosts have reached a certain level of maturity within our own Solar System – fuelled both by advances in theoretical modelling and a host of satellites that observe the Sun-Earth system. Based on this understanding the first attempts are being made to characterize the interactions between stars and planets and their coupled evolution, which have relevance for habitability and the search for habitable planets. This Symposium was proposed by the Organizing Committee members of the IAU division E Working Group on “Impact of Magnetic Activity on Solar and Stellar Environments” and brought together scientists from diverse, interdisciplinary scientific areas such as solar, stellar and planetary physics, climate physics and astrobiology to review the current state of our understanding of solar and stellar environments.

The scientific program was structured along the following themes:

1. Solar and Stellar Activity
2. Heliospheric and Astrospheric Environments
3. Coupled Star-Planet Evolution
4. Exoplanets, Habitability and Life

Invited speakers in each theme provided the general overview and background and summarized important advances and challenges, while contributed talks discussed the most recent scientific research in these topics. Following each session, an extended period was purposely allocated to discussions. It needs to be emphasized that this resulted in significant exchanges between the audience and the speakers of individual sessions. This added value to the understanding of the talks and led to discussions of outstanding questions that need to be tackled by the community.

Highlights of the meeting have already been separately summarized in the Scientific Highlights section of this report.

The country of Brazil was chosen to make the meeting accessible to the Latin American scientific community, and easy connectivity ensured participation from other continents. A total of 81 scientists from 19 countries attended the Symposium, out of which 23 were graduate students. Of the total participants 38% were women. It is also encouraging to note that 59% of the selected contributed talks were by women.

All participants were accommodated in the Conference Hotel, which provided ample scope for discussions. This was ideal for interactions outside of lectures and resulted in many fruitful and exciting scientific exchanges spilling over to conference breaks and the evening. The afternoon of Wednesday was kept free for a social tour to allow participants to rejuvenate.

While the IAU funding was utilized for supporting few participants, additional funding was leveraged from the American Astronomical Society's Solar Physics Division (AAS-SPD) and the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) to support the meeting. The Brazilian agencies SAB, FAPESP, CAPES and CNPQ co-sponsored the meeting, with SAB extending logistical support through its web-hosting and payment services.

The proceeding of IAUS 328 is currently in preparation and will be published by the International Astronomical Union. Further details on the conference may be accessed through the links:

<http://www.sab-astro.org.br/IAUS328>

<http://www.cessi.in/iaus328/>