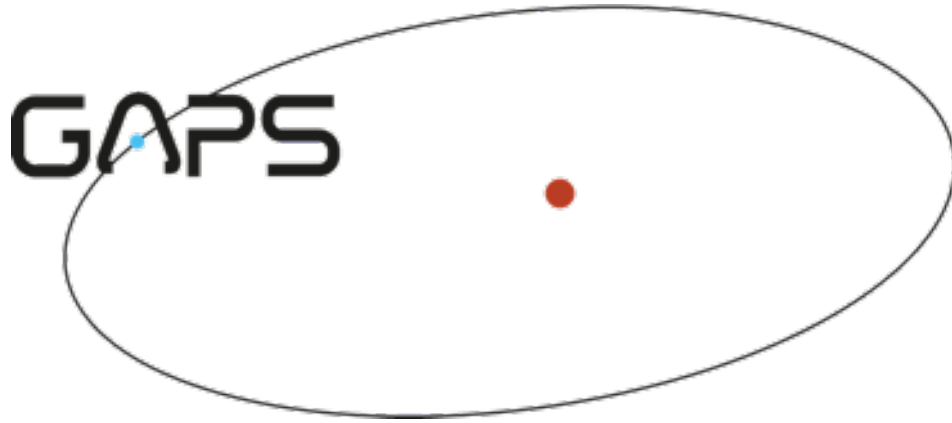


16th GAPS meeting



Report of Contributions

Contribution ID: 2

Type: **not specified**

The abundance signature of low-mass stars with planets.

Wednesday, 6 May 2020 14:50 (15 minutes)

Methods to derive in a consistent way stellar abundances of low-mass stars from optical spectra are still missing. In this contribution we present a first attempt to fill this gap. Our methodology is based on the use of principal component analysis and sparse Bayesian's fitting methods. A set of M dwarfs in binary systems orbiting around an FGK primary was observed and is used to training our methods. We use our results to test whether the correlations between the metallicity, individual chemical abundances, mass of the star and the presence of different type of planets found for FGK stars still holds for the less massive M dwarf stars.

Primary author: MALDONADO PRADO, Jesus (Istituto Nazionale di Astrofisica (INAF))

Presenter: MALDONADO PRADO, Jesus (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Additional works

Contribution ID: 3

Type: **not specified**

Understanding the XUV-induced Atmospheric Erosion of Young Planets and their Evolution With Time

Tuesday, 5 May 2020 14:50 (15 minutes)

In the talk we will discuss the effects of X-ray and ultraviolet radiation on atmospheric erosion around young stars. Specifically, we focus on the bimodal distribution of exoplanet radii (i.e. “The Fulton Gap”; Fulton et al. 2017). In Modirrousta-Galian et al. (2020,b) this distribution is theoretically analysed in order to make several predictions that can be astronomically tested. For instance, a transition region from $1.75\text{--}2.00R_{\oplus}$ full of planets with and without hydrogen atmospheres is expected. Within this region a small peak in mega-Earths (telluric planets with masses greater than $10M_{\oplus}$) is also probable. These are the remnant cores of bodies which originally had much larger atmospheres but then lost them. Furthermore, whilst it cannot be currently verified, a potential mass distribution in exoplanets is shown. Finally, the dependence of the initial and present radius distributions on system parameters (i.e. equilibrium temperature, stellar temperature, and orbital distance) will be discussed.

Primary authors: MODIRROUSTA GALIAN, Darius (Istituto Nazionale di Astrofisica (INAF)); Prof. MICELA, Giuseppina (INAF –Osservatorio Astronomico di Palermo); Dr LOCCI, Daniele (INAF –Osservatorio Astronomico di Palermo)

Presenter: MODIRROUSTA GALIAN, Darius (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Modelling and interpretation

Contribution ID: 4

Type: **not specified**

YO38: validation study for TOI-942

Monday, 4 May 2020 15:50 (15 minutes)

Here we present a validation study for the TESS object of interest TOI-942. We performed a follow-up of this object with HARPS-N, collecting about 30 spectra. The HARPS-N spectra allow us to characterise the star and confirm the presence of the planet.

Primary author: CARLEO, Ilaria

Presenter: CARLEO, Ilaria

Session Classification: GAPS Young

Contribution ID: 5

Type: **not specified**

Update on V830 Tau/YO01

Monday, 4 May 2020 14:50 (15 minutes)

I will present the results for V830 Tau after the third observing season with HARPS-N came to an end. The talk will be structured following the emerging structure of the draft in preparation, highlighting the concept and the main points to be addressed in the publication.

Primary author: Mr DAMASSO, Mario (INAF-OATo)

Presenter: Mr DAMASSO, Mario (INAF-OATo)

Session Classification: GAPS Young

Contribution ID: 6

Type: **not specified**

Status programma Young Objects

Monday, 4 May 2020 14:30 (15 minutes)

Sommario delle osservazioni, del campione stellare e delle attività del programma Young Objects, inclusa la definizione delle criticità rilevate.

Primary authors: Dr BENATTI, Serena (Istituto Nazionale di Astrofisica (INAF)); DESIDERA, Silvano (INAF OAPd)

Presenter: Dr BENATTI, Serena (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Young

Contribution ID: 7

Type: **not specified**

Special Objects - aggiornamento M109 + M112

Tuesday, 5 May 2020 16:05 (25 minutes)

I will provide an update on M109 and M112

Primary author: BARBATO, Domenico

Presenter: BARBATO, Domenico

Session Classification: GAPS Special Objects

Contribution ID: 8

Type: **not specified**

Special Objects - aggiornamento M112

I will provide an update on M112

Primary author: Dr PINAMONTI, Matteo

Presenter: Dr PINAMONTI, Matteo

Session Classification: GAPS Special Objects

Contribution ID: 9

Type: **not specified**

Special Objects - aggiornamento M108

Tuesday, 5 May 2020 15:50 (15 minutes)

I will provide an update on M108

Primary author: PINAMONTI, Matteo

Presenter: PINAMONTI, Matteo

Session Classification: GAPS Special Objects

Contribution ID: **10**

Type: **not specified**

Special Objects - aggiornamento nane M GAPS1

Tuesday, 5 May 2020 16:35 (15 minutes)

I will provide an update on the old GAPS1 M dwarfs followed as special objects

Primary author: AFFER, Laura

Presenter: AFFER, Laura

Session Classification: GAPS Special Objects

Contribution ID: 11

Type: **not specified**

Special Objects - overview del programma

Tuesday, 5 May 2020 15:30 (15 minutes)

I will summarize the status of the special objects program

Primary author: SOZZETTI, Alessandro

Presenter: SOZZETTI, Alessandro

Session Classification: GAPS Special Objects

Contribution ID: 12

Type: **not specified**

Special Objects - Discussione e Prospettive

Discuteremo dello stato del programma e delle prospettive di evoluzione

Primary author: SOZZETTI, Alessandro

Presenter: SOZZETTI, Alessandro

Session Classification: GAPS Special Objects

Contribution ID: 13

Type: **not specified**

GAPS1 - What's left?

Monday, 4 May 2020 10:55 (10 minutes)

Breve discussione di analisi dei programmi GAPS1 ancora pendenti.

Primary author: SOZZETTI, Alessandro

Presenter: SOZZETTI, Alessandro

Session Classification: General Session

Contribution ID: 15

Type: **not specified**

Introduction

Tuesday, 5 May 2020 09:30 (10 minutes)

A general introduction about the current state of the VIS/NIR observations and analysis, and the future prospects

Primary authors: BONOMO, Aldo Stefano (Istituto Nazionale di Astrofisica (INAF)); NASCIMBENI, Valerio (INAF-OAPD)

Presenters: BONOMO, Aldo Stefano (Istituto Nazionale di Astrofisica (INAF)); NASCIMBENI, Valerio (INAF-OAPD)

Session Classification: GAPS Atmospheres

Contribution ID: 16

Type: **not specified**

Atmospheric RML effect of KELT-20b

Tuesday, 5 May 2020 10:25 (15 minutes)

Atmospheric RML effect of KELT-20b

Primary author: RAINER, Monica (Istituto Nazionale di Astrofisica (INAF))

Presenter: RAINER, Monica (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Atmospheres

Contribution ID: 17

Type: **not specified**

Update on the VIS analysis with SLOppy

Tuesday, 5 May 2020 09:45 (15 minutes)

Update on the VIS analysis with SLOppy

Primary author: SICILIA, Daniela (Università di Padova)

Presenter: SICILIA, Daniela (Università di Padova)

Session Classification: GAPS Atmospheres

Contribution ID: **18**

Type: **not specified**

Reflected light from 51 Peg b

Tuesday, 5 May 2020 10:05 (15 minutes)

Reflected light from 51 Peg b

Primary author: SCANDARIATO, Gaetano (Istituto Nazionale di Astrofisica (INAF))

Presenter: SCANDARIATO, Gaetano (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Atmospheres

Contribution ID: 19

Type: **not specified**

H-alpha absorption on WASP-33b

Tuesday, 5 May 2020 10:45 (15 minutes)

H-alpha absorption on WASP-33b

Primary author: BORSA, Francesco (Istituto Nazionale di Astrofisica (INAF))

Presenter: BORSA, Francesco (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Atmospheres

Contribution ID: 20

Type: **not specified**

The unexpected chemistry of HD209458

Tuesday, 5 May 2020 11:05 (15 minutes)

By performing high-resolution transmission spectroscopy with GIANO-B over the whole near-infrared, we measured the signature of seven molecular species via cross correlation with model spectra.

Primary author: GIACOBBE, Paolo (Istituto Nazionale di Astrofisica (INAF))

Presenter: GIACOBBE, Paolo (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Atmospheres

Contribution ID: 21

Type: **not specified**

Disequilibrium chemistry in the atmospheres of the three warm giant planets WASP-69 b, WASP-107b and WASP-80b

Tuesday, 5 May 2020 11:25 (15 minutes)

Here we report preliminary results of the atmospheric studies we performed on the three warm giant planets, Wasp-69b, Wasp-107b and Wasp-80b. By using the PCA technique, and the cross-correlation method, we succeeded in detecting 7 molecules in these exo-atmospheres. Given the low temperature of the investigated exoplanets, some of these molecules are un-expected by equilibrium theories, we have thus to bring up the disequilibrium chemistry to explain our finding.

Primary author: GUILLUY, Gloria (Istituto Nazionale di Astrofisica (INAF))

Presenter: GUILLUY, Gloria (Istituto Nazionale di Astrofisica (INAF))

Session Classification: GAPS Atmospheres

Contribution ID: 22

Type: **not specified**

Modelling exoplanet atmospheres to interpret GIANO observations

Tuesday, 5 May 2020 14:30 (15 minutes)

Near-infrared high-resolution spectroscopy relies on cross correlation with model spectra to extract information about the chemical and physical conditions of exoplanet atmospheres. In this talk I will review recent efforts to identify the most reliable molecular line lists applicable to simulate the high temperatures of extrasolar planets. Furthermore, I will explain how GIANO could be used to detect transmission spectra of cloudy exoplanets and distinguish cloudy atmospheres from atmospheres with a high metallicity, currently challenging at low spectral resolution.

Primary author: BROGI, Matteo (University of Warwick)

Presenter: BROGI, Matteo (University of Warwick)

Session Classification: Modelling and interpretation

Contribution ID: 23

Type: **not specified**

Atmospheric parameters and chemical composition of YO stars

Wednesday, 6 May 2020 14:30 (15 minutes)

The detailed characterisation of stars is important in many astrophysical fields. In particular, knowing with great precision the atmospheric parameters and chemical composition of planet hosting stars allows to fully characterise exoplanets and address a number of aspects, e.g. the planet-metallicity relation.

In our work, we performed a precise determination of the atmospheric parameters and a detailed chemical analysis of high-resolution spectra of stars observed by the GAPS consortium. The selected targets are intermediate-age stars (< 700 Myr), that have been observed simultaneously in the optical with HARPS-N and in the near infrared with GIANO-B spectrographs at TNG, in GIARPS mode. We analysed the spectra by applying a new method, that exploits the use of titanium lines to derive the atmospheric parameters, in particular surface gravities and microturbulence velocity parameter. The resulting parameters have been used to derive the abundances in the optical and NIR spectra through equivalent width and spectral synthesis methods, respectively. We derived abundances for eleven atomic species: C I, Na I, Mg I, Al I, Si I, Ca I, Ti I, Ti II, Cr I, Cr II, Fe I, Fe II, Ni I and Zn I. Our spectroscopic determination of the atmospheric parameters are in excellent agreement with the initial photometric guesses. We also found a good agreement between the optical and NIR abundances, with all stars having close-to-solar metallicities. The lack of systematic trends between elemental abundances and effective temperatures validates our methods. However, we observed that the coolest stars in the sample, with $T < 5400$ K, display higher abundances for the ionised species, in particular Cr II, and for high-excitation potential C I lines. On the contrary, carbon abundances derived from CH molecular band at 4300 Å, do not display the same behaviour as the optical C I estimates.

Primary author: BARATELLA, Martina (Università degli studi di Padova)

Presenter: BARATELLA, Martina (Università degli studi di Padova)

Session Classification: Additional works

Contribution ID: 24

Type: **not specified**

Exoplanets at TNG

Monday, 4 May 2020 09:30 (20 minutes)

The status of the programs on the exoplanets at TNG will be reviewed, with a particular emphasis on the current difficult situation.

Primary author: PORETTI, Ennio (Istituto Nazionale di Astrofisica (INAF))

Presenter: PORETTI, Ennio (Istituto Nazionale di Astrofisica (INAF))

Session Classification: General Session

Contribution ID: 25

Type: **not specified**

Report delle osservazioni di GAPS2.0

Monday, 4 May 2020 10:15 (15 minutes)

In questo contributo sono riportate le statistiche delle notti di osservazione dall'inizio del long program GAPS2.0. In particolare, vengono mostrate le statistiche relative al run AOT40 (appena finito) e quelle relative al run AOT41 (appena cominciato).

Primary authors: Dr CLAUDI, Riccardo; Dr BIGNAMINI, Andrea (INAF Osservatorio Astrofisico di Trieste)

Presenter: Dr CLAUDI, Riccardo

Session Classification: General Session

Contribution ID: 26

Type: **not specified**

Transiting Planet Host Activity 2

Wednesday, 6 May 2020 15:30 (15 minutes)

In questo contributo è presentato lo stato dello studio dell'attività delle stelle ospite di pianeti transitanti. Sono trattati sistemi osservati durante GAPS1.0 e confrontati con altri sistemi transitanti e stelle di campo.

Primary author: Dr CLAUDI, Riccardo

Presenter: Dr CLAUDI, Riccardo

Session Classification: Additional works

Contribution ID: 27

Type: **not specified**

Status dello studio del sistema YO36

Monday, 4 May 2020 15:30 (15 minutes)

YO36 è una stella giovane attorno nella curva di luce K2 della quale sono stati osservati i transiti di quattro oggetti diversi. La stella è molto attiva e le misure di Velocità Radiale ottenute fin'ora non sembrano mostrare segnali kepleriani.

Primary authors: Dr CLAUDI, Riccardo; Dr DAMASSO, Mario (INAF - Osservatorio Astrofisico di Torino)

Presenter: Dr CLAUDI, Riccardo

Session Classification: GAPS Young

Contribution ID: 28

Type: **not specified**

Status of YO analysis

Monday, 4 May 2020 15:10 (15 minutes)

I'll give a brief summary of the status of the analysis of the Young Object target YO14

Primary author: MALAVOLTA, Luca (Università degli Studi di Padova)

Presenter: MALAVOLTA, Luca (Università degli Studi di Padova)

Session Classification: GAPS Young

Contribution ID: 29

Type: **not specified**

RV follow-up prediction

Wednesday, 6 May 2020 15:10 (15 minutes)

Presenter: BENATTI, Serena (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Additional works

Contribution ID: **30**

Type: **not specified**

Discussion

Wednesday, 6 May 2020 16:10 (40 minutes)

Presenter: ALL

Session Classification: Additional works

Contribution ID: 31

Type: **not specified**

Updates on HARPS-N

Monday, 4 May 2020 09:55 (15 minutes)

Presenter: COSENTINO, Rosario (Istituto Nazionale di Astrofisica (INAF))

Session Classification: General Session

Contribution ID: **32**

Type: **not specified**

nuova WBS e PMP

Monday, 4 May 2020 11:20 (15 minutes)

Presenter: MAGGIO, Antonio (Istituto Nazionale di Astrofisica (INAF))

Session Classification: General Session

Contribution ID: 33

Type: **not specified**

Discussion

Monday, 4 May 2020 16:10 (20 minutes)

Presenter: ALL

Session Classification: GAPS Young

Contribution ID: 34

Type: **not specified**

Evaporation models and the importance of determining the parameters of young planets

Tuesday, 5 May 2020 15:10 (15 minutes)

The knowledge of planetary mass and radius of young planets is crucial in the understanding if their atmospheres can survive at the intense XUV stellar irradiation

Presenter: LOCCI, Daniele

Session Classification: Modelling and interpretation

Contribution ID: 35

Type: **not specified**

Special objects: discussion and perspectives

Wednesday, 6 May 2020 09:30 (15 minutes)

Presenter: SOZZETTI, Alessandro (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Perspectives and synergies

Contribution ID: 36

Type: **not specified**

Coordinations with GTO and TFOP

Wednesday, 6 May 2020 09:50 (10 minutes)

Presenter: SOZZETTI, Alessandro (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Perspectives and synergies

Contribution ID: 37

Type: **not specified**

GAPS –CHEOPS Synergies

Wednesday, 6 May 2020 10:10 (15 minutes)

Presenter: PIOTTO, Giampaolo

Session Classification: Perspectives and synergies

Contribution ID: **38**

Type: **not specified**

Discussion

Wednesday, 6 May 2020 10:30 (30 minutes)

Presenter: ALL

Session Classification: Perspectives and synergies

Contribution ID: 39

Type: **not specified**

Wavelength calibration for GIANO-B spectra

Monday, 4 May 2020 10:35 (15 minutes)

Presenter: BROGI, Matteo

Session Classification: General Session

Contribution ID: 40

Type: **not specified**

GAPS1-HADES

Monday, 4 May 2020 11:05 (10 minutes)

Updates/results from GAPS1-HADES

Presenter: PINAMONTI, Matteo (Istituto Nazionale di Astrofisica (INAF))

Session Classification: General Session

Contribution ID: 41

Type: **not specified**

Correcting the impact of stellar spots on ARIEL transmission spectra

Wednesday, 6 May 2020 15:50 (15 minutes)

In my study, I analyze the impact of stellar spots on ARIEL observations and their effects on the extraction of the planetary signal from primary transit observations. I develop a method to determine the size and temperature of the spots by using the out-of-transit observations and I define a procedure to reliably extract the planetary spectrum in the presence of spots.

Presenter: CRACCHIOLO, Gianluca

Session Classification: Additional works