

# **Seminars on “Introduction to Observational Astronomy” (2018-2019)**

## **Introduction**

During the winter season of 2018-2019 (when the weather conditions are not favorable for observations) we organized a series of seminars entitled “Introduction to Observational Astronomy”. The goal of these seminars was to introduce interested individuals to the aspects of the observational techniques for scientifically useful observations, i.e. how amateur observations can help professionals and contribute to Astronomy in general. The topics were split into specific celestial objects in order to provide a short overview of the amateurs’ contribution and the particular observational methods.



## Program

**Saturday, December 1, 2018**

– *Introduction to the amateur observational Astronomy*

What is Observational Astronomy? The Greek amateur community and its main events, selected international communities and their activities.

– *Under the starry night*

Introduction to the starry sky, the constellations, the movement of the celestial objects, as well as various methods of orientation and time calculation.

## **Saturday, December 15, 2018**

### *– Deciphering the light*

The nature of light and how we exploit it to understand and study the celestial objects. Introduction to the basics of photometry and spectroscopy.

### *– Camera, telescopes, and other equipment*

What equipment is required to observe the celestial objects? The human eye as an observing tool, and how telescopes and cameras help us to enhance its capability.

## **Saturday, January 12, 2019**

### *– Sun, “Star of the Day”*

Focus on the Sun, and its importance for the Solar system and for life in Earth. The methods to observe the Sun safely.

### *– The other “moons” of Earth*

An introduction to the artificial satellites in orbit around Earth, and the observational techniques to record them.

## **Saturday, January 26, 2019**

### *– The smaller “cousins” of the planets*

An introduction to the minor bodies of the Solar system, and stellar occultations by them and the planets of the Solar system.

– *Shooting stars, the lilliputian inhabitants of our Solar system*

Exploring the characteristic properties, the importance, and the methods to systematically record meteors, which are important carriers of information for the history of the Solar system.

## **Saturday, February 9, 2019**

– *The Planets and their Moons*

A short trip to all planets of our Solar system and to some of their most interesting moons. Discussing the current methods used to observe them, record their dynamic appearance, and to contribute to the Planetary Science.

– *The temperamental stars*

From birth to death, stars continuously experience phases of instability. Observing variable stars is a key to improve our understanding of stellar evolution.

## **Saturday, February 23, 2019**

– *Space clouds and stellar companies*

Star clusters, nebulae, galaxies – some of the most impressive sky objects. What equipment is required to see these and which catalogs to use.

– *Planets in alien worlds*

From hot Jupiters to Super-Earths, a trip to explore the formation of planetary systems.

## Feedback



To better acquire and quantify the feedback from the participants we implemented a number of evaluation methods based on the Europlanet Evaluation Toolkit: (a) “pebbles in a jar”, (b) post-event surveys, (c) “3 words”, (d) snapshot interviews. The results are actually impressive, and with some initial processing of the collected data (Moutsouroufi et al. 2019), we have:

- 94% satisfied participants, as measured by “pebbles in a jar”
- “Interesting” was the top word selection, followed by “clear” informative”, “detailed”, “understandable”, using the 3-word method
- 88% would like to know more about each subject presented
- 91% admitted that their interest in Astronomy increased

- 88% would like to deal with observations in the future
- 92% felt that their expectation was fulfilled
- 97% considered that the whole event was well-organized

## Future plans



Currently we are in the process to further exploit the data collected with the post-event surveys, and analyze the snapshot interviews. Upon completion of this process we plan to continue to the publications of the results, in order to share our approach and experience with the community.

However, all feedback, including negative one, was shared with the speakers to improve in future activities. This is crucial since this activity bridges two of our most major actions in this field: (i) a series of 20 theoretical courses on subjects

of modern Astronomy (2013-2014), (ii) the “Focus Months” project (2014-2015), where each month was dedicated to a specific astronomical object, including both theory and hands-on workshops on observations and data-analysis (see Maravelias et al. 2018, Kardasis et al. 2015). In that way we have formulated a number of seminars that can proceed gradually from a general view of Astronomy to more specialized topics and finally to hands-on workshops to develop contributors to Science.

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*All photos © Iakovos Strikis*

### **References**

- Moutsouroufi, K.; Maravelias, G.; Strikis, I. M.; Kardasis, E.; Voutyras, O.; Kountouris, G.; Evangelopoulos, A.; Aggelis, K.; Papadeas, P.; Schmidt, T.; Christou, A. (2019), *Evaluating introductory seminars on observational astronomy, using the Europlanet Evaluation Toolkit*, EPSC-DPS Joint Meeting 2019, held 15 – 20 September, 2019 in Geneva, Switzerland
- Maravelias, Grigoris; Vourliotis, Emmanouel; Marouda, Krinio; Belias, Ioannis; Kardasis, Emmanouel; Papadeas, Pierros; Strikis, Iakovos D.; Vakalopoulos, Eleftherios; Voutyras, Orfefs (2018), *A paradigm to develop new contributors to Astronomy*, submitted to the proceedings of IAU FM14 “IAU’s role on global astronomy outreach, the latest challenges and bridging different communities” (Vienna, Aug. 23, 2018), [[2018arXiv181004562M](https://arxiv.org/abs/2018arXiv181004562M)]
- Kardasis, E.; Vourliotis, E.; Bellias, I.; Maravelias, G.; Vakalopoulos, E.; Papadeas, P.; Marouda, K.; Voutyras, O. (2015), *Spreading the passion for scientifically useful planetary observations*, European Planetary Science Congress 2015, held 27 September – 2 October, 2015 in Nantes, France,

id.EPSC2015-707 [[2015EPSC...10..707K](#)]