IN MEMORIAM IERONIM MIHĂILĂ

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Abstract. This article is intended for the memory of the Professor of Astronomy at the University of Bucharest, Ieronim Mihăilă, who trained many generations of astronomers, so he was involved in all his activity in the development of Romanian astronomy.

Key words: Astronomy – History of the astronomy – Education in astronomy .

1. INTRODUCTION

Professor Ieronim Mihăilă passed away on 3rd of November, 2019. Born on 19th of August 1936, in Boteşti, Neamţ County, he accomplished the studies at the Faculty of Mathematics, University of Bucharest, in 1959. After his graduation he was hired assistant lecturer at the Chair of Astronomy at the same faculty.

He has had the privilege to study with famous teachers of that time, as Constantin Drâmbă (**?**), Călin Popovici, Nicolae Dinulescu and others.

In 1969 he obtained the doctoral degree, in Russia, at Leningrad University, with the renowned professor T.A.Agekian, in the field of galactic astronomy, with the dissertation *Structure and evolution of the quasi-stationary stellar systems*.

2. TEACHING ACTIVITY

As teacher at the Faculty of Mathematics, Bucharest University, Ieronim Mihăilă successively hold positions corresponding to all degree of the academic career: lecturer (1964–1973), senior lecturer (1973–1991), professor (1991–2006), and consulting professor after 2006. From 1993, professor Ieronim Mihăilă started to lead doctoral fellowships. He supervised several doctors in mathematics, the speciality astronomy, at Bucharest University.

During the period between 1990 and 1996, he was the head of the Chair of Mechanics, Differential Equations and Astronomy, at the same faculty.

Along his entire academic career, professor Ieronim Mihăilă trained numerous generations of astronomers. Many of his students have occupied researcher positions at Bucharest Observatory, now the Astronomical Institute of Romanian Astronomy.

Many times, his former students, who became astronomers, consulted him on many issues, in different fields. With a huge astronomical culture, he was able to advice in many problems, from general astronomy, celestial mechanics, to astrophysics and cosmology.

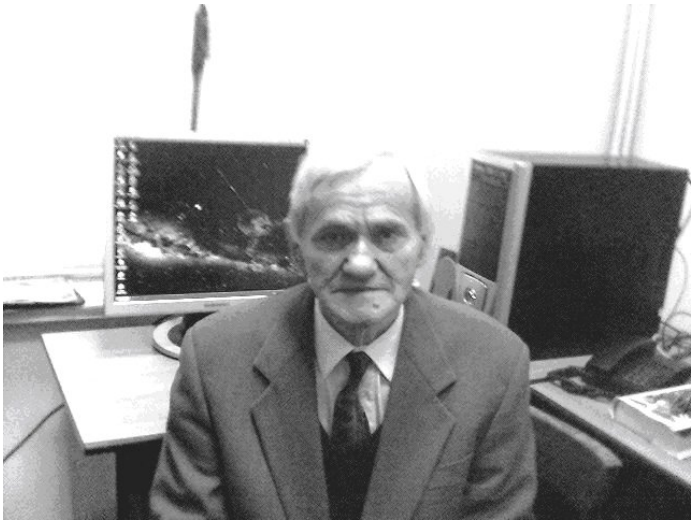

Fig. 1 – Professor Ieronim Mihăilă visiting his former students, now astronomers at Bucharest Observatory, in 2005.

3. DEVELOPMENT OF ROMANIAN ASTRONOMY

Professor Ieronim Mihăilă successfully led a rich activity in the development of astronomy in Romania. His important contribution for the growth of the Romanian astronomy, and the various domains of his astronomical researches have to be underlined.

He was member in various astronomical societies, such as the *International Astronomical Union* (IAU), where he was active at Division A Fundamental Astronomy, Division C Education, Outreach and Heritage, Division G Stars and Stellar Physics, and Commission 46 Astronomy Education & Development. As member of the *Romanian National Astronomy Committee* (RNAC) he occupied the position of general secretary between 1977 and 1992.

The name of the professor Mihăilă is linked to the first planetarium in Bucharest. It was constructed at the third floor of the Faculty of Mathematics, Bucharest University, at the beginning of the years '70. This planetarium was dedicated to the education of students, but it could also be visited by organised groups. This plan-

etarium remained the single one in the Romania's capital until 2000 year, maybe later.

After 1990, when the political and social conditions allowed, he was one of the persons who actively helped at the foundation of the *Romanian Astronomical Journal* (RoAJ). He was member of the Editorial board of this journal, from the beginning and until his death, in November 2019.

We also mention that he was reviewer of the *Astronomical Book Year* of the Astronomical Institute of Romanian Academy, where the yearly astronomical ephemeris has been published, but also scientific articles addressed to researches or to amateur astronomers.

4. RESEARCHES

The researches of professor Mihăilă spanned in the fields of celestial mechanics, astrophysics, galactic astronomy, and cosmology. We have found his publications (listed in the references section), that appeared between 1969 and 2012, in different fields of astronomy. Here we highlighted some of his major contributions.

4.1. STELLAR DYNAMICS

Some of his early papers focused on the determination of the elements of eclipsing binary stars, galactic rotation of the planetary nebulae subsystem, the rotating systems of gravitating bodies in quasi-stationary state, velocity distribution in a spherical stellar system. He also studied the structure of a quasi-stationary spherical system of stars differing in mass (**?**, **?**, **?**, **?**).

4.2. GENERAL ASTRONOMY AND CELESTIAL MECHANICS

General astronomy topics have been carried, like astronomical refraction for an ellipsoidal atmosphere (**?**), or the tropical year duration (**?**). A more accurate formula for the length of the tropical year was derived in terms of the coefficients of the polynomial expression of the Sun's mean longitude. The obtained value for the length of the tropical year is more short than the known length, having as consequences the definition of the second of ephemeris time and the calculation of the Besselian epoch corresponding to a Julian date. The computation of the astronomical refraction in the meridian plane of the place for the ellipsoidal atmosphere of the Earth was performed in another article, where it was shown that Laplace-Oriani theorem is also valid for the considered model. By comparing these results to those obtained by the spherical model, the authors concluded that the refraction calculated for the ellipsoidal model is greater than the one for the spherical model. The difference between the two

models increases with the zenithal distance and depends on the latitude of the place. The value of the dynamical flattening of the Earth was computed in another article (**?**), authored by a student of professor Mihăilă.

Professor Mihăilă established an equation for determination of the polar moment of inertia, using the properties of invariance of the moments of inertia with respect to the reduction of the equation of the ellipsoid of inertia to the canonical form. He computed the moments of inertia of the Standard Earth (**?**).

A special work of the professor was devoted to the invariantive mechanics, a creation of the Romanian academician Octav Onicescu in 1973. Studying the two bodies problem in this special mechanics, he demonstrated the perihelion movement of Mercury could be estimated also in the invariantive mechanics (**?**, **?**, **?**).

A correlation between Wolf's sunspot numbers and the barycentric distance of the Sun, from 1755 to 1986 (cycles 1 - 21), was studied. A weak correlation was found, *i.e.* 0.110 +/-0.065. The correlation is independent of the level of solar activity (maxima and minima). In this way, the proportionality found by Dauvillier for the epochs of maxima was not confirmed (**?**).

In the last decade, professor Ieronim Mihăilă was interested in experiments to highlight the Allais effect at the solar eclipses (**?**, **?**, **?**, **?**). The Allais effect represents a disturbance of the Foucault pendulum, and manifests in a decrease of the angular rotation velocity of the oscillation plane of the pendulum during the solar eclipse.

Professor Ieronim Mihăilă and his team performed more experiments at the University of Bucharest, during solar eclipses: on August 11, 1999, on May 31, 2003, and October 3, 2005. Their experiments confirmed the existence of the Allais effect. During the total solar eclipse on August 11, 1999, a slower motion of the plane of oscillation was observed.

In the case of the solar eclipse on May 31, 2003, in the vicinity of the maximum of the eclipse, it was determined a minor growth of the period of oscillation, and the motion of the plane of oscillation became slower after the maximum of the eclipse (**?**).

5. IN PLACE OF CONCLUSIONS

Professor Ieronim Mihăilă was one of the leader of the Romanian astronomical education for almost 50 years, in the last 30 years being the single one at the Bucharest University. A very modest man and a demanding teacher, he educated many generations of astronomers and mathematicians, holding the general astronomy classes for all the students, in these last 30 years. Unfortunately, after his retreat no one could continue this work of astronomy teaching at the Faculty of Mathematics of Bucharest University, due to many causes, not the case to mention here.

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