First Congress of Greek Mathematicians
Special Session in History and Philosophy of Mathematics
June 25, 2018

Organizer

Dionysios Anapolitanos

Time Schedule of Talks

	Monday, June 25
17:00 – 17:20	Papathanasiou
17:20 – 17:40	Panou
17:40 – 17:50	*break*
17:50 – 18:10	Chalkou
18:10 – 18:30	Phili
18:30 – 18:50	Stefanides

Speakers

Maria Chalkou (National Technical University of Athens)
Mathematics in the Greek-speaking Schools from Byzantium to the End of Ottoman Rule

This paper describes the development of Mathematical Education from the beginning of the Byzantine Empire to the end of Ottoman rule. Firstly we refer to Codex Vindobonensis phil. Gr. 65, from which important information on the "Byzantine Mathematics" was drawn. It is a voluminous manuscript on Logistice and Geodaisia, by an anonymous author, which was taught to a wide public coming from various social strata before the Fall of Constantinople. Its content concerns problems of Arithmetic, Algebra and Geometry. Next follows a description of the 18th-century Codex 72 of the Library of Demetsana, a work by Nikephoros Theotokes, taught at the School of Demetsana, which contains a syllabus of Euclidean Geometry, Arithmetic, Algebra as well as problems related to "Commercial Mathematics".

These manuscripts are of considerable importance, since Codex 65 is in essence the Mathematical Encyclopedia of the Byzantines, while Codex 72, titled Mathematarion, and later published as Stoixeia Mathematikon (Volume A), is one of the first texts of non-elementary Mathematics in the period of Ottoman Rule.

In the lecture it is mentioned that some of the problems of Codex 72 are bequeathed by the Byzantine authors, too, who generally preserved them, commented on them and enriched them with additional remarks. The view discussed is that, as regards the science of Mathematics, Byzantium contributed not only to the preservation of the knowledge of the Ancient Greeks, the Chinese, the Persians, the Hindus, but also to its development.

Evangelia Panou (University of the Aegean)
The contribution of mathematics in the development of ancient astronomy: comparative study on the works of Aratus of Soli, Hipparchus of Nicaea and Claudius Ptolemy

In the present work a comparative study on the works of Aratus of Soli, Hipparchus of Nicaea and Claudius Ptolemy regarding the contribution of mathematics in the development of ancient astronomy in the period from 4th century B.C. to 2nd century A.C. is presented. In ancient times observations of heavenly bodies were very common. Time

measurement units were invented; astronomical instruments were constructed thanks to mathematical and astronomical knowledge. Here: a) the major extant poetic and popular surviving work of Aratus of Soli (in Cilicia) Phaenomena and Diosemeia (Appearances and Forecasts), b) the only surviving work of Hipparchus of Nicaea Commentary on the Phaenomena of Eudoxus and Aratus and c) the great comprehensive treatise of astronomy Almagest written by Claudius Ptolemy, are compared. Aratus' work is a description of constellations in the starry sky, the celestial phenomena and weather lore. Detailed study of the observations of celestial constellations, the Moon and the Sun described in this work give useful information about time measurements during 4th century B.C. During 2nd century B.C. more accurate observations are made thanks to accurate constructions of astronomical instruments. From the study of Hipparchus' work, knowledge about methodology used for celestial phenomena's observations is obtained. Conclusions about mathematics' contribution in taking accurate time measurements are drawn. These conclusions are compared to those derived from Ptolemys work written four centuries later. The comparative study focuses on the role of mathematics in astronomical observations, in construction of astronomical instruments, in time measurements and calculations.

Maria Papathanassiou (National and Kapodistrian University of Athens)

Geometrical models and mechanical construction of Cosmos

Recent research of the Antikythera mechanism revived the interest in the debate regarding the relations between theoretical mathematics, especially Geometry, and its applications on ancient Greek technology. A short survey of some ancient technical achievements shows the background of practical mathematical knowledge that later acquired its "theoretical" foundation. Especially, astronomical geometrical models for the planetary motion reflect mutual influences between them and technology, and the efforts for the construction of mechanical models of the world. These theoretical constructions used the cycle and the sphere. This use was due not only to philosophical reasons but the possibility of their very accurate making. Moreover, their application to mechanical devices implies the possibility of their rotation as circular gears or spheres. Consequently, there was a need to construct a train of teethed gears of determined diameter, number of teeth, and rotation speed, to represent a planetary motion accurately. Every step of progress both in theory and its applications shows the contribution of the great Greek mathematicians.

Christine Phili (National Technical University of Athens)

Cyparissos Stéphanos and the French Mathematical Society

In this paper we present the scientific as well as the administrative activities of Cyparissos Stéphanos as archivist of the French Mathematical Society (1878-1884). By his numerous papers he won the esteem of the mathematical community and as "godfather" (parrain) introduced in the society the following famous mathematicians: H. Poincaré, S. Lie but also S. Kovaleskaya, who was "mal vue" at that epoch.

Panagiotis Stefanides

Generator Polyhedron of Platonic-Euclidean Solids

The work presented, recent to date, discovered invention, resulted from elaborating on my work "Treatise on Circle" which concerns 3 Concentric Circles in Ratio to each other of $4/\pi$, analyzing and comparing the results, for evident conditions for found Symmetries or Dissymmetries and consequently conditions for Harmony or Disharmony.