

## John D. Hadjidemetriou, 1937–2013

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This special issue on Dynamics of Trojan Planets is dedicated to the memory of John Hadjidemetriou.

John D. Hadjidemetriou was born in Thessaloniki in 1937. He got his B.Sc. in Mathematics from the University of Thessaloniki in 1959 and his Ph.D. in Physics and Astronomy from the University of Manchester in 1965, under the guidance of Prof. Z. Kopal. In 1970, he was elected full Professor of Theoretical Mechanics at the Physics Department of the University of Thessaloniki, at the age of 33. He continuously served the department over a period of 42 years.

John's Ph.D. Thesis "The two body problem with variable mass" (and his first paper in *Icarus* 2, 440, 1963), has been recognized as a fundamental contribution in the field and is still cited in the literature. Since then he continued working on Celestial Mechanics, in particular on families of resonant periodic orbits in the restricted and general three-body problems and on the stability of planetary, asteroid and satellite motion. He always stressed that "periodic

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orbits consist the backbone of the topology of phase space". John also became famous for his method of constructing a symplectic map that preserves the location and stability of periodic orbits in resonances, which became known as "Hadjidemetriou's map".

In later years he worked on the interpretation of the phenomenon known as stable chaos and on the dynamics and stability of exo-planetary systems. He associated the resonant planetary dynamics with families of periodic orbits and he computed these families for various cases. He also showed that the introduction of dissipative forces makes the periodic orbits "attractors" and a planetary system migrates along the families, verifying, in such a way, the work on planetary migration published previously by other researchers. In this framework he showed the possibility of the transition from a  $1/1$  resonant planetary motion to a satellite motion. The last paper he co-authored, entitled "Multiplanet destabilization and escape in post-main-sequence systems", appeared recently in MNRAS (430, 3383, 2013) and was based on the theory he developed in his first paper.

John played a key role in the development of Celestial Mechanics in Greece. He supervised 7 Ph.D. Theses in this field and acted as coordinator or principal investigator in three EU-funded research projects. He retired in 2005 and, since then, he remained active both in teaching and in research, as Professor Emeritus of the University of Thessaloniki. His numerous students organized a Conference in his honor in the summer of 2008, in Litoro, Greece, which was attended by about 70 participants from 16 countries.

John was a corresponding member of the Academy of Athens. He was also an elected member of Commission's 7 SOC from 1979 to 1991 and served as President of the Commission for the 2000–2003 term. He was a member of the Celestial Mechanics Institute and Associate Editor of the field's leading journal, Celestial Mechanics and Dynamical Astronomy, for twenty years. He was a founding member of the European Astronomical Society and the first vice-president of the Hellenic Astronomical Society.

John really excelled in teaching, not only within his duties in the University of Thessaloniki but in international schools as well. He was an active member of the Cortina and Ramsau/Bad Hofgastein meetings as well as of the Greek Non-linear Dynamics annual schools. He wrote a two-volume book on Theoretical Mechanics, in Greek, which is still adopted by many Greek Universities.

I had the privilege to have been one of John's first students in his first teaching year as a professor of the University of Thessaloniki (1970) and, later on, one of his collaborators. All of us, students, collaborators and friends, will always remember him with great affection.

John Hadjidemetriou passed away peacefully on Thursday, March 21, 2013, in Thessaloniki, Greece. He is survived by his wife and three children.