

## Call for Papers: Special Issue of Earth, Planets and Space (EPS) “Physical Processes in Non-Uniform Finite Magnetospheric Systems —50 Years of Tamao’s Resonant Mode Coupling Theory—”

The resonant mode coupling of MHD waves is one of the most fundamental processes in space science and has become an important concept for understanding almost all aspects of ULF waves. Prof. Tamao (Professor Emeritus, Univ. Tokyo, 1931–2010) was a pioneer in this area and he theoretically investigated the field-line resonance in a series of papers he published starting in 1961, a decade before the phenomenon was confirmed observationally. The study he published in 1965 in Science Reports of the Tohoku University, Series 5, Geophysics, is now widely available. In this study he mathematically formulated the field-line resonance as a coupled oscillation of Alfvén and fast magnetosonic modes in a dipole field geometry. The workshop celebrating the 50th year of Tamao’s resonant mode coupling theory was successfully held in 2011 at Fukuoka. This workshop covers not only the resonant mode coupled theory of the ULF waves but also other 3 topics to which Prof. Tamao had many important contributions. The all topics and their targets are as follows;

**ULF wave:** This topic is focused on the coupled resonance oscillation theory, observational proof of the coupled oscillation, and recent progress of these topics;

**Wave-particle interaction:** This topic is devoted to ULF-wave particle interaction, drift waves, and up-to-date particle acceleration study;

**Magnetosphere-ionosphere coupling:** This topic discusses many matters from the fundamental physical process of the ULF-wave ionosphere interaction and DC disturbance-ionosphere interaction. As an extreme development of this topic, recent progress of the global MHD simulation is presented in terms of the magnetosphere-ionosphere compound system;

**Ballooning & Interchange Instabilities in the Magnetotail:** This topic discusses the two closely-related instabilities based on recent observations and modeling efforts.

Commemorating this workshop and addressing the future research on the ULF waves and related fields, we decided to publish the papers discussed in this workshop. This special issue will collect not only papers presented in the workshop but also others from scientists who could not attend this workshop. EPS will review all the manuscripts before publication. Contributors to this special issue should submit their papers to the EPS editorial office by email ([eps@terrapub.co.jp](mailto:eps@terrapub.co.jp)) following the instructions for regular EPS submissions. Authors should attach Submission Forms A and B with the names of 5 potential referees plus with their email addresses. For details, please visit the web site:

<http://www.terrapub.co.jp/journals/EPS>, and click on “Information for Contributors”.

Please state “For the Special Issue: Physical Processes in Non-Uniform Finite Magnetospheric Systems—50 Years of Tamao’s Resonant Mode Coupling Theory—” clearly in the covering letter that accompanies the submission. We encourage electronic submissions. After papers are accepted, the authors will receive instructions for the final manuscript from the editorial office. The deadline for manuscript submissions for this special issue is 31 March 2012. This special issue will hopefully be published in December, 2012.

For more information on this special issue, please contact the corresponding editor (S. Fujita, [sfujita@mc-jma.go.jp](mailto:sfujita@mc-jma.go.jp)); questions on manuscript preparation should be addressed to the EPS editorial office.

Note: EPS accepts manuscripts of original research contributions only, and so-called “review papers” will not be accepted.

Guest Editors: Shigeru Fujita, Meteorological College, Japan  
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Robert Lysak, University of Minnesota, USA  
Shinichi Ohtani, APL, Johns Hopkins University, USA  
Kiyohumi Yumoto, Kyushu University, Japan