ISSN: 2667-419X

# ESKİŞEHİR TECHNICAL UNIVERSITY JOURNAL OF SCIENCE AND TECHNOLOGY B— Theoretical Sciences

ESKİŞEHİR TEKNİK ÜNİVERSİTESİ BİLİM VE TEKNOLOJİ DERGİSİ B— Teorik Bilimler

4<sup>th</sup> INTERNATIONAL CONFERENCE
ON EARTHQUAKE ENGINEERING AND SEISMOLOGY
11-13 OCTOBER 2017

4.ULUSLARARASI DEPREM MÜHENDİSLİĞİ VE SİSMOLOJİ KONFERANSI 11-13 EKİM 2017

SPECIAL ISSUE / ÖZEL SAYI & 2018



Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi B – Teorik Bilimler

Volume: 6 - ICEES Special Issue - 2018

Eskişehir Technical University Journal of Science and Technology B - Theoretical Sciences (formerly Anadolu University Journal of Science and Technology B – Theoretical Sciences) is an **peer-reviewed** and **refereed international journal** by Eskişehir Technical University. Since 2010, it has been regularly published and distributed biannually and it has been published biannually and **electronically only since 2016**.

Manuscripts submitted for publication are analyzed in terms of scientific quality, ethics and research methods in terms of its compliance by the Editorial Board representatives of the relevant areas. Then, the abstracts of the appropriate articles are sent to two different referees with a well-known in scientific area. If the referees agree to review the article, full text in the framework of the privacy protocol is sent. In accordance with the decisions of referees, either directly or corrected article is published or rejected. Confidential reports of the referees in the journal archive will be retained for ten years. All post evaluation process is done electronically on the internet. Detailed instructions to authors are available in each issue of the journal.

Eskişehir Technical University holds the copyright of all published material that appear in Eskişehir Technical University Journal of Science and Technology B - Theoretical Sciences.

"Anadolu Üniversitesi Bilim ve Teknoloji Dergisi B- Teorik Bilimler (Anadolu University Journal of Science and Technology B - Theoretical Sciences)" published within Anadolu University started to be published within Eskişehir Technical University which was established due to statute law 7141. Hence, the name of the journal is changed to "Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi B- Teorik Bilimler (Eskişehir Technical University Journal of Science and Technology B - Theoretical Sciences)".

Indexed by DOAJ - Directory of Open Access Journals, EBSCO and ULAKBIM

ISSN: 2667-419X

STATE CHNICAL STATE

Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi B - Teorik Bilimler

### ICEES Special Issue / UDMSK Özel Sayısı - 2018

#### OWNER / SAHİBİ

Prof. Dr. Tuncay DÖĞEROĞLU for Eskişehir Technical University Eskişehir Teknik Üniversitesi Rektörü Prof. Dr. Tuncay DÖĞEROĞLU

### EDITOR-IN-CHIEF/BAS EDİTÖR

Prof. Dr. Ersin YÜCEL Eskişehir Technical University, Graduate School of Sciences, 26470 Eskişehir, TURKEY Phone: +90-222-335 05 80 /ext.:1755

Fax: +90-222 3354122 e-mail: <a href="mailto:eyucel@eskisehir.edu.tr">eyucel@eskisehir.edu.tr</a>

### **CO-EDITOR IN CHIEF/ BAŞ EDİTÖR YARDIMCISI**

Assoc. Prof. Dr. Yunus ÖZDEMİR
Eskişehir Technical University, Graduate School of Sciences, 26470 Eskişehir, TURKEY
Phone: +90-222-335 05 80 /ext.:1755

Fax: +90-222 335 41 22 e-mail: yunuso@eskisehir.edu.tr

### CO-EDITOR IN CHIEF/ BAŞ EDİTÖR YARDIMCISI

Assoc. Prof. Dr. Hanife APAYDIN ÖZKAN
Eskişehir Technical University, Graduate School of Sciences, 26470 Eskişehir, TURKEY
Phone: +90-222-335 05 80 /ext.:1755

Fax: +90-222 335 41 22 e-mail: hapaydin1@eskisehir.edu.tr

## **CONTACT / İLETİŞİM**

Eskişehir Technical University, Graduate School of Sciences 26470 Eskişehir, TURKEY Phone: +90-222-335 05 80 /ext.: 1767

Fax: +90-222 335 41 22

e-mail: btda@anadolu.edu.tr, btd@anadolu.edu.tr



Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi B – Teorik Bilimler

## ICEES Special Issue / UDMSK Özel Sayısı - 2018

#### SPECIAL ISSUE GUEST EDITORS

ÖZEL SAYI MİSAFİR EDİTÖRLERİ

Yasin Dursun SARI (Eskişehir Technical University, Turkey)

Özgür AVŞAR (Eskişehir Technical University, Turkey)

Uğur AVDAN (Eskişehir Technical University, Turkey)

Mehmet İNANÇ ONUR (Eskişehir Technical University, Turkey)

Muammer TÜN (Eskişehir Technical University, Turkey)

Emrah PEKKAN (Eskişehir Technical University, Turkey)

TYPESET / DİZGİ

Handan YİĞİT



Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi B – Teorik Bilimler

Earthquake Engineering Association of Turkey (EEAT) organizes an International Conference on Earthquake Engineering and Seismology (ICEES) every two years. Fourth conference was held in Eskişehir hosted by Anadolu University between 11th and 13th of October 2017. During the conference 293 papers have been presented in 13 major topics which are, Disaster Management, Concrete Buildings and Reinforcement Applications, Steel Structures, Geotechnical Earthquake Engineering, Bridges and Dams, Strong Ground Motion, Seismic Isolation and Tremor Control, Seismology, Design Methods, Remote Sensing and Geographic Information Technologies, Structural Analysis and Evaluation Methods, Masonry and Historical Buildings and finally High Structures. In this special edition of Anadolu University Journal of Science and Technology – B Theoretical Sciences, 26 paper have been selected from the papers have been presented in the conference, evaluated, inspected and deemed successful by the referees and presented to the readers.

#### **Special Issue Guest Editors**

Türkiye Deprem Mühendisliği Derneğinin (TDMD) her iki yılda bir düzenlediği Uluslararası Deprem Mühendisliği ve Sismoloji Konferansı(UDMSK)'nın dördüncüsü 11-13 Ekim 2017 tarihleri arasında Eskişehir Anadolu Üniversitesi ev sahipliğinde düzenlenmiştir. Konferans süresince Afet Yönetimi, Betonarme Yapılar ve Güçlendirme Uygulamaları, Çelik Yapılar, Geoteknik Deprem Mühendisliği, Köprüler ve Barajlar, Kuvvetli Yer Hareketi, Sismik Yalıtım ve Titreşim Kontrolü, Sismoloji, Tasarım Yöntemleri, Uzaktan Algılama ve Coğrafi Bilgi Sistemleri, Yapısal Analiz ve Değerlendirme Yöntemleri, Yığma ve Tarihi Yapılar, Yüksek Binalar şeklindeki 13 başlık altında 293 bildiri sunulmuştur. Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi – B Teorik Bilimler dergisinin bu UDMSK özel sayısında, konferans sırasında sunulan bildirilerden incelenmiş, konularında başarılı görülmüş, seçilmiş ve makale haline getirilmiş 26 bildiri okuyuculara sunulmuştur.

Özel Sayı Misafir Editörleri

#### **ABOUT**

Eskişehir Technical University Journal of Science and Technology B- Theoretical Sciences (formerly Anadolu University Journal of Science and Technology B- Theoretical Sciences) is an peer-reviewed and refereed international journal by Eskişehir Technical University. Since 2010, it has been regularly published and distributed biannually and it has been published biannually and electronically only since 2016.

- The journal accepts TURKISH and ENGLISH manuscripts.
- The journal is indexed by EBSCO, DOAJ and ULAKBIM.

#### AIM AND SCOPE

The journal publishes research papers, reviews and technical notes in the fields of theoretical sciences such as Physics, Biology, Mathematics, Statistics, Chemistry and Chemical Engineering, Environmental Sciences and Engineering, Civil Engineering, Electrical and Electronical Engineering, Computer Science and Informatics, Materials Science and Engineering, Mechanical Engineering, Mining Engineering, Industrial Engineering, Aeronautics and Astronautics, Health Sciences, Pharmaceutical Sciences, and so on.

#### PEER REVIEW PROCESS

Manuscripts are first reviewed by the editorial board in terms of its its journal's style rules scientific content, ethics and methodological approach. If found appropriate, the manuscript is then send to at least two referees by editor. The decision in line with the referees may be an acceptance, a rejection or an invitation to revise and resubmit. Confidential review reports from the referees will be kept in archive. All submission process manage through the online submission systems.

#### **OPEN ACCESS POLICY**

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. Copyright notice and type of licence : **CC BY-NC-ND.** 

The journal doesn't have Article Processing Charge (APC) or any submission charges.

#### **AUTHOR GUIDELINES**

#### All manuscripts must be submitted electronically.

You will be guided stepwise through the creation and uploading of the various files. There are no page charges. Papers are accepted for publication on the understanding that they have not been published and are not going to be considered for publication elsewhere. Authors should certify that neither the manuscript nor its main contents have already been published or submitted for publication in another journal. We ask a signed **Copyright Form** to start the evaluation process. After a manuscript has been submitted, it is not possible for authors to be added or removed or for the order of authors to be changed. If authors do so, their submission will be cancelled.

Manuscripts may be rejected without peer review by the editor-in-chief if they do not comply with the instructions to authors or if they are beyond the scope of the journal. After a manuscript has been accepted for publication, i.e. after referee-recommended revisions are complete, the author will not be permitted to make any changes that constitute departures from the manuscript that was accepted by the editor. Before publication, the galley proofs are always sent to the authors for corrections. Mistakes or omissions that occur due to some negligence on our part during final printing will be rectified in an errata section in a later issue.

This does not include those errors left uncorrected by the author in the galley proof. The use of someone else's ideas or words in their original form or slightly changed without a proper citation is considered plagiarism and will not be tolerated. Even if a citation is given, if quotation marks are not placed around words taken directly from another author's work, the author is still guilty of plagiarism. All manuscripts received are submitted to iThenticateR, a plagiarism checking system, which compares the content of the manuscript with a vast database of web pages and academic publications. Manuscripts judged to be plagiarised or self-plagiarised, based on the iThenticateR report or any other source of information, will not be considered for publication.

#### **Preparation of Manuscript**

**Style and Format:** Manuscripts should be <u>single column</u> by giving one-spaced with 2.5-cm margins on all sides of the page, in Times New Roman font (font size 11). Every page of the manuscript, including the title page, references, tables, etc., should be numbered. All copies of the manuscript should also have line numbers starting with 1 on each consecutive page.

Manuscripts must be upload as word document (\*.doc, \*.docx vb.). Please avoid uploading *texts in \*.pdf format.* 

#### Manuscripts should be written in Turkish or English.

**Symbols, Units and Abbreviations:** Standard abbreviations and units should be used; SI units are recommended. Abbreviations should be defined at first appearance, and their use in the title and abstract should be avoided. Generic names of chemicals should be used. Genus and species names should be typed in italic or, if this is not available, underlined.

Please refer to equations with capitalisation and unabbreviated (e.g., as given in Equation (1)).

Manuscript Content: Articles should be divided into logically ordered and numbered sections. Principal sections should be numbered consecutively with Arabic numerals (1. Introduction, 2. Formulation of problem, etc.) and subsections should be numbered 1.1., 1.2., etc. Do not number the Acknowledgements or References sections. The text of articles should be, if possible, divided into the following sections: Introduction, Materials and Methods (or Experimental), Results, Discussion, and Conclusion.

#### Title and contact information

The first page should contain the full title in sentence case (e.g., Hybrid feature selection for text classification), the full names (last names fully capitalised) and affiliations (in English) of all authors (Department, Faculty, University, City, Country, E-mail), and the contact e-mail address for the clearly identified corresponding author.

#### **Abstract**

The abstract should provide clear information about the research and the results obtained, and should not exceed 300 words. The abstract should not contain citations and must be written in Times New Roman font with font size 9.

#### **Keywords**

Please provide 3 to 5 keywords which can be used for indexing purposes.

#### Introduction

The motivation or purpose of your research should appear in the "Introduction", where you state the questions you sought to answer, and then provide some of the historical basis for those questions.

#### Methods

Provide sufficient information to allow someone to repeat your work. A clear description of your experimental design, sampling procedures, and statistical procedures is especially important in papers describing field studies, simulations, or experiments. If you list a product (e.g., animal food, analytical device), supply the name and location of the manufacturer. Give the model number for equipment used.

#### Results

Results should be stated concisely and without interpretation.

#### **Discussion**

Focus on the rigorously supported aspects of your study. Carefully differentiate the results of your study from data obtained from other sources. Interpret your results, relate them to the results of previous research, and discuss the implications of your results or interpretations.

#### **Conclusion**

This should state clearly the main conclusions of the research and give a clear explanation of their importance and relevance. Summary illustrations may be included.

### **Acknowledgments**

Acknowledgments of people, grants, funds, etc. should be placed in a separate section before the reference list. The names of funding organizations should be written in full.

#### References

Citations in the text should be identified by numbers in square brackets. The list of references at the end of the paper should be given in order of their first appearance in the text or in alphabetical order according to the surname of the fist author. All authors should be included in reference lists unless there are 10 or more, in which case only the first 10 should be given, followed by 'et al.'. Do not use individual sets of square brackets for citation numbers that appear together, e.g., [2, 3, 5–9], not [2], [3], [5]–[9]. Do not include personal communications, unpublished data, websites, or other unpublished materials as references, although such material may be inserted (in parentheses) in the text. In the case of publications in languages other than English, the published English title should be provided if one exists, with an annotation such as "(article in Turkish with an abstract in English)". If the publication was not published with an English title, cite the original title only; do not provide a self-translation. References should be formatted as follows (please note the punctuation and capitalisation):

#### **Journal articles**

Journal titles should be abbreviated according to ISI Web of Science abbreviations.

Guyon I. and Elisseeff A. An introduction to variable and feature selection. *J. Mach. Learn. Res.* 2003; 3: 1157-1182.

Izadpanahi S., Ozcınar C., Anbarjafari G. and Demirel H. Resolution enhancement of video sequences by using discrete wavelet transform and illumination compensation. *Turk J. Elec. Eng. & Comp. Sci.* 2012; 20: 1268-1276.

#### Rooks

Haupt R.L. and Haupt S.E. *Practical Genetic Algorithms*. 2nd ed. New York, NY, USA: Wiley, 2004.

Kennedy J. and Eberhart R. Swarm Intelligence. San Diego, CA, USA: Academic Press, 2001.

#### **Chapters in boks**

Poore J.H., Lin L., Eschbach R. and Bauer T. Automated statistical testing for embedded systems. In: Zander J., Schieferdecker I., Mosterman P.J., editors. *Model-Based Testing for Embedded Systems*. Boca Raton, FL, USA: CRC Press, 2012. pp. 111-146.

#### **Conference proceedings**

Li R.T.H. and Chung S.H. Digital boundary controller for single-phase grid-connected CSI. In: *IEEE 2008 Power Electronics Specialists Conference*; 15–19 June 2008; Rhodes, Greece. New York, NY, USA: IEEE. pp. 4562-4568.

#### Theses

Boynukalın Z. Emotion analysis of Turkish texts by using machine learning methods. MSc, Middle East Technical University, Ankara, Turkey, 2012.

#### **Tables and Figures**

All illustrations (photographs, drawings, graphs, etc.), not including tables, must be labelled "Figure." Figures must be submitted in the manuscript.

All tables and figures must have a caption and/or legend and be numbered (e.g., Table 1, Figure 2), unless there is only one table or figure, in which case it should be labelled "Table" or "Figure" with no numbering. Captions must be written in sentence case (e.g., Macroscopic appearance of the samples.). The font used in the figures should be Times New Roman with 9 pt. If symbols such as  $\times$ ,  $\mu$ ,  $\eta$ , or  $\nu$  are used, they should be added using the Symbols menu of Word.

All tables and figures must be numbered consecutively as they are referred to in the text. Please refer to tables and figures with capitalisation and unabbreviated (e.g., "As shown in Figure 2...", and not "Fig. 2" or "figure 2").

The resolution of images should not be less than 118 pixels/cm when width is set to 16 cm. Images must be scanned at 1200 dpi resolution and submitted in jpeg or tiff format. Graphs and diagrams must be drawn with a line weight between 0.5 and 1 point. Graphs and diagrams with a line weight of less than 0.5 point or more than 1 point are not accepted. Scanned or photocopied graphs and diagrams are not accepted.

Figures that are charts, diagrams, or drawings must be submitted in a modifiable format, i.e. our graphics personnel should be able to modify them. Therefore, if the program with which the figure is drawn has a "save as" option, it must be saved as \*.ai or \*.pdf. If the "save as" option does not include these extensions, the figure must be copied and pasted into a blank Microsoft Word document as an editable object. It must not be pasted as an image file (tiff, jpeg, or eps) unless it is a photograph.

Tables and figures, including caption, title, column heads, and footnotes, must not exceed  $16 \times 20$  cm and should be no smaller than 8 cm in width. For all tables, please use Word's "Create Table" feature, with no tabbed text or tables created with spaces and drawn lines. Please do not duplicate information that is already presented in the figures.

## ESKİŞEHİR TEKNİK ÜNİVERSİTESİ BİLİM VE TEKNOLOJİ DERGİSİ B- Teorik Bilimler

Cilt: 6 / UDMSK Özel Sayısı / Aralık - 2018

## ESKİŞEHİR TECHNICAL UNIVERSITY JOURNAL OF SCIENCE AND TECHNOLOGY B-Theoretical Sciences

Volume: 6 / UDMSK Special Issue / December - 2018

## **<u>ICINDEKILER / CONTENTS</u>**

Sayfa / Page

ÇANAKKALE-AYVACIK DEPREM FIRTINASININ (14 OCAK-20 MART 2017) SİSMİK KAYNAKLARI H. Sözbilir, B. Uzel, Ö. Sümer, S. Eski, M. Softa, Ç. Tepe, Ç. Özkaymak, A. Baba
PROPOSITION OF A SPECTRAL AMPLIFICATION MODEL FOR NEAR FAULT DIRECTIVITY EFFECT WITH UTILIZING PROBABILISTIC EARTHQUAKE SCENARIOS S. Moghimi, S. Akkar
FARKLI DEPREM YÜKLERİNİN BETONARME KONSOL BİR İSTİNAT DUVARININ MALİYETİNE ETKİSİNİN ANALİZİ Ö. Arslan, İ. Keskin, A. Ateş
ESKİŞEHİR ALÜVYON FORMASYONUNUN KONUMSAL DEĞİŞKENLİĞİNİN CPT ÖLÇÜMLERI İLE BELİRLENMESİ E. Pekkan, M. Tün, S. Mutlu 36
BETONARME BİNALARIN PATLAYICI KULLANILARAK İÇE YIKIMINDA BETON DAYANIMININ YAPI DAVRANIŞINA ETKİSİ H. Özmen, K. Soyluk, Ö. Anıl
CONTRIBUTION OF GRAVITY FRAMES TO SEISMIC PERFORMANCE OF STEEL MOMENT RESISTING FRAMES  M. Zorlu, B. Akbaş, J. J. Shen, O. Şeker
THERMAL REMOTE SENSING TECHNIQUES FOR STUDYING EARTHQUAKE ANOMALIES IN 2013 BALOCHISTAN EARTHQUAKES G. Kaplan, U. Avdan
DEPREMLERDE GÖZLENEN ETKİLERİN GÖNÜLLÜ KATILIMIYLA HIZLI BİR ŞEKİLDE TOPLANMASI M. Tün, E. Pekkan, S. Mutlu
A GEOGRAPHIC INFORMATION SYSTEM DESIGNED FOR DISASTER MANAGEMENT  İ. T. Güven
NATURAL CHARACTERISTICS AND NONLINEAR BEHAVIOR OF A NEW RC FORMWORK SYSTEM  C. Serhatoğlu, Q. T. Nguyen, R. Livaoğlu
A DETECTION OF COLLAPSED BUILDING FROM UNMANNED AERIAL VEHICLE DATA WITH OBJECT BASED IMAGE CLASSIFICATION  R. Çömert, D. Küçük Matçı, U. Avdan

UÇ VE SÜRTÜNME KAZIKLARININ DEPREM KUVVETLERİ ALTINDA DAVRANIŞININ MODELLENMESİ P. S. Öztürk Kardoğan, M. İ. Onur	117
EŞDEĞER ANALİZ YÖNTEMİ İLE ZEMİNİN DİNAMİK DAVRANIŞININ DEĞERLENDİRİLMESİ: ESKİŞEHİR ODUNPAZARI ÖRNEĞİ E. Civelekler, D. V. Okur, K. B. Afacan	124
DOLGU DUVARLARIN DÜZLEM DIŞI YÖNDE HAVA YASTIĞI İLE DENEYİ İ. O. Demirel, A. Yakut, B. Binici	
DÜŞÜK VE ORTA YÜKSEKLİKTEKİ BİNALARDA ÇEKİÇLEME ETKİSİ M. Kamal, B. T. Çaycı, M. İnel	141
ZEMİN KATI KOROZYONA MARUZ KALMIŞ BİR BİNANIN PERFORMANS DEĞERLENDİRMESİ İ. Yüksel, G. B. Sakcalı	150
ÖZEL TASARLANMIŞ ÇELİK ÇAPRAZLARIN BETONARME YAPILARIN DEPREM PERFORMANSINA ETKİSİ H. Özkaynak, B. Adak, B. M. Ağca	
DİNAMİK YÜKLER ALTINDA ŞEV PERFORMANSININ İNCELENMESİ E.Güler, G. Yılmaz, İ. Bozbey	175
BEHAVIOR OF A DENSE NONPLASTIC SILT UNDER CYCLIC LOADING E. Karakan, A. Sezer, N. Tanrınıan, S. Altun	183
KÜTAHYA YEŞİL MİNARENİN KAPALI VE AÇIK ŞEREFELİ DİNAMİK DAVRANIŞLARININ KARŞILAŞTIRILMASI M. S. Döven, C. Serhatoğlu, O. Kaplan, R. Livaoğlu	192
DOĞAL AFETLER SONRASINDA İNSANLARIN İLKYARDIM BİLGİ VE BECERİ DÜZEYİ: NE YAPABİLİRİZ?  G. Kuş	204
REZONANT KOLON DENEYİ İLE KİL ZEMİNİN DİNAMİK PARAMETRELERİNİN BELİRLENMESİ B. Görgün, N.Ural	211
İNSANSIZ HAVA ARAÇLARININ AFET YÖNETİMİNDE KULLANIMI M. Uysal, M. Yılmaz, İ. Tiryakioğlu, N. Polat	219
EVALUATION OF DEFORMATION LIMITS IN CODES FOR REINFORCED CONCRETE COLUMNS  M. A. Özdemir, İ. Kazaz	225
20 ARALIK 2007 BALA DEPREMİ (Mw 5.4) VE ARTÇILARININ ORTA ANADOLU İÇİN YENİ BİR-BOYUTLU SİSMİK HIZ YAPISI MODELİ İLE YENİDEN KONUMLANDIRILMASI B. Çıvgın, B. Kaypak	
ZEMİN DAVRANIŞI VE MESNET KOŞULLARININ TARİHİ YAPILARIN DİNAMİK DAVRANIŞINA ETKİSİ G. Eren, K. Beyen	