IŞIK ÜNİVERSİTESİ
IŞIK UNIVERSITY

BİLİMSEL ARAŞTIRMA PROJESİ SONUÇ RAPORU
SCIENTIFIC RESEARCH PROJECT FINAL REPORT

Proje Kodu
Project Code

BAP14B102

PROJE BAŞLIĞI
RROJECT TITLE

Univalent functions and Generalized Hypergeometric Functions in Nano and Micro Structures

Proje Yürütücüsünün Unvanı, Adı Soyadı
Title, Name, Surname of Project's Principal Investigator

Assoc. Prof. Melike AYDOĞAN

Tarih
Date

January 1, 2017

İçindekiler
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GENEL ÖZET BİLGİLER
GENERAL OUTLINE

Proje Kodu Project Code	BAP14B102
Proje Adı Project Title	**Univalent functions and Generalized Hypergeometric Functions in Nano and Micro Structures**
Proje Yürütücüsü (ünvan belirtilerek) Project Investigator (with title)	Assoc. Prof. Melike Aydoğan

Proje Süresi Project Duration	Başlama: Start	April 2014	Bitiş: Finish	September 2016	Ek Süre: Additional time	**NO**

Proje Ekibi Project Team	**PI:** Assoc. Prof. Melike Aydogan **Researchers:** Prof.Dr. Maslina Darus (University of Kebangsaan ,Malaysia) Assoc. Prof. Fatih Özaydın (Işık University, Turkey) Assit. Prof. Yasar Polatoğlu (İstanbul Kültür University, Turkey) Assoc. Prof. Azmi Ali ALTINTAŞ (Okan University, Turkey)
Ayrılan Toplam Ödenek Total Grant	5400TL
Gerçekleşen Toplam Harcama Total Expenditures	5400TL
Kalan Ödenek The Remaining Grant	0 TL
Raporun Gönderildiği Tarih Submission Date	December 25, 2016

HARCAMALAR LİSTESİ
LIST OF EXPENDITURES

Seyahat Giderleri: Seyahat giderleri gerekçeleri, tarihleri ve maliyetleriyle belirtilmelidir.
Travel Expenses: Travel expenses must be stated together with its justifications, dates, and costs.

0 TL.

Hizmet Giderleri: Hizmet alımlarında hizmetin türü ve maliyeti olabildiğince ayrıntılı bir şekilde verilmelidir.
Service Expenses: Type of services and their costs should be explained in as many detail as possible.

0 TL.

Sarf Giderleri: Sarf malzemeleri sınıflandırılarak, maliyetleriyle belirtilmelidir.
Supply Expenses: Supply expenses should be classified and indicated with their costs.

0 TL.

Makine-Teçhizat Giderleri: Alet, teçhizat ve kitap alımları alınan malın adı, tipi, adedi, ve maliyeti belirtilerek gösterilmelidir.
Machinery-Equipment Expenses: Tool, equipment and book purchases should be stated by specifying their name, type, quantity and cost.

5400 TL Mac Book Pro 15 inch Retina QC 17, 2.2,GHz/16 GB/256 GBFlash /Iris
Yazılım Giderleri: Alınan yazılımın adı, maliyeti belirtilmedir.
Software Costs**:** Name and cost of purchased software should be stated.

0 TL.

Grant: 5400TL

Total Expense: *5400 TL*

Remaining Grant: 0 TL

Teknik Rapor aşağıdaki bölümlerden oluşan kısa ve öz bir rapor olmalıdır.
Technical Report should consist of the following sections; it should be brief and concise.

1. Giriş, projenin tanıtımı ve amacı
   Introduction, details of the project, and its purpose

2. İlgili kurumlar ve kullanılan yöntemler
   Relevant institutions and research methodology employed

3. Bilimsel bulgular ve sonuçlar (gerekirse tablo, şekil ve grafiklerle)
   Scientific findings and conclusions (with tables, figures and graphs if necessary)

4. Sonuçların tartışılması ve değerlendirilmesi
   Discussion and evaluation of results

1 Giriş, projenin tanıtımı ve amacı
   Introduction, details of the project, and its purpose
Nano technology- science, physics, chemistry and engineering basically are new interdisciplinary areas . In large-scale systems can be better understood and the smaller scale of the existing behavior of the materials studied have been shown to exhibit different behavior. Emerged to describe this amazing situation and to understand the processes of mathematics has entered the commissioning.

Studies were conducted in the first 1900's the years, many different versions; these functions are working with a new set of parameters to impose or to create a new sub-classes according to the selection by the addition of a number of Researchers is examining the geometric properties of these functions have been identified and a number of results for use in basic science and engineering. This examination of projects planned generalized hypergeometric functions, the importance of literature new integral operators and will be achieved through new subclasses to be derived mathematical modeling, nanotechnology, which has a very important place in engineering some applications will gain the ability to do. Complex analysis is in the background, physics, engineering, such as in some forms of effective interdisciplinary science can be handled in a different manner will allow the applicability of nanotechnology. In this project, mathematics, physics benefiting from the wealth offered us, We plan to explore the nature of interdisciplinary of nanotechnology. Due to the scope of the project subject of the studies carried out in nano and micro structures today there is a growing demand worldwide. At the same time many people specializing in various industries are trying to continue its work on nanotechnological unknown mathematical modeling. Only this model suitable for implementation efforts and upgrades that we plan to make our generalized hypergeometric functions and integral operators for mathematical expansions are inadequate. In this regard, experienced shortcomings, as well as planning for and nano technolojical mathematical description can be done that can allow us to contribute to nanotechnology, which will cause the resulting gap can be substantially corrected.
Project issues, the need is to allow the scope and content are likely to be contacted by the cutting-edge research leading nanotechnological research centers in the world.

One of the problems in this area can be honored only for certain sectors and not just demand products of the company are being implemented is the use of a certain part only. However, nanotechnology is more about geometrical modeling structure and a large number of studies can be made, in terms of the company's new products and ideas, you need to deviate from the view that enables the discovery of smart materials. In order to develop the ideas of the project aimed at increasing cooperation and interaction with such interdisciplinary areas of science Both the scientific point of view as well as sectoral as is being projected as a qualified project can attract the attention of the phenomenon of basic science researchers at the graduate level, it will be through interaction with the applied sciences, quite interesting will be the topic being considered. Will provide an excellent preparation in terms of academic career.

2 İlgili kurumlar ve kullanılan yöntemler
   Relevant institutions and research methodology employed

Several national and international institutions have played role in the Project, namely

Işık University

Prof. Melike Aydogan and Prof. Fatih Özaydın published papers and conference papers for this project. They attended several conferences.

State University of New York, College at Brockport

Prof. Melike Aydoğan made additional research in this campus. Drake Memorial library has an excellent place to search about this project.

Okan University

Professor Azmi Ali Altıntaş published qualified papers for this project.

İstanbul Kültür University
Prof. Yaşar Polatoglu published many papers and investigated new subclasses for this project.

Additional Researches

Some of the researchers of the Project, namely Prof. Maslina Darus , Prof. Yasemin Kahramaner, Prof. Can Yeşilyurt, Prof. Sinan Bugu, Prof. Mark Tame, Prof. Lan Yang, Prof. Sahin Kaya Özdemir worked for this project, they have published many papers and attended several conferences .

Research Methodology

During the project, we have developed new operators, the classes are formed, the method of solving shall follow from the existing method in the previous literature. However, backup techniques are needed such as computing via numerical. Almost every problems will need the upgrade version of software as the problems get into general terms that even analytical

proving may not be the excellent tools. It can become very complicated when involve the hypergeometric functions. We have published many papers about this project.

5 Bilimsel bulgular ve sonuçlar (gerekirse tablo, şekil ve grafiklerle)
Scientific findings and conclusions (with tables, figures and graphs if necessary)

5.1.

ÜRÜNLER LİSTESİ SAYFASI
LIST OF PRODUCTS PAGE

1) Yazılı Ürünler
   Written products

    a) Kitap
   Book

    b) Uluslararası dergilerde yayımlanan makaleler
   Articles published in international journals

- **4 articles** in international journals.

- Several other articles either under review or under preparation. To be added to the this report as soon as published.

   1. Entisar El-Yagubi, Maslina Darus and **Melike Aydogan** "**On a Subclass of p-valent Starlike Functions Associated with a Generalized Hypergeometric Differential operator**", New Developments in Pure and Applied Mathematics, ISSN: 2227-4588, ISBN: 978-1-61804-287-3, pp. 159-162, 16.03.2015.

   2. **M. Aydogan**, Y. Polatoglu, H. Esra Ucar, A.Yemisci and Y. Kahramaner " **Quasi-conformal Harmonic Mappings Related To The Janowski Starlike Functions",** New Developments in Pure and Applied Mathematics, 135-139, 2015.

   3. E. Ozkan, **M. Aydogan** and Y. Polatoglu, "Some New Distortion Theorems for Starlike Harmonic Functions of Order Alpha", Acta Universitatis Apulensis, 42, 171-180, 2015.

   4. Can Yesilyurt, Sinan Bugu, Fatih Özaydın, Azmi Ali Altıntaş, Mark Tame, Lan Yang and Şahin Kaya Ozdemir, "Deterministic Local Doubling of W states", Journal of the Optical Society of America B, Vol. 33, no.11, 2016.

    c) Ulusal dergilerde yayımlanan makaleler
   Articles published in national journals

   0 articles in national journals.

d) Uluslararası bilimsel toplantılarda sunulan bildiriler
Notifications presented in international scientific meetings

1) **M. Aydogan**, "Some Distortion Theorems for Sakaguchi Functions ", SEAM 2016: 32nd Southeastern Analysis Meeting, **Tampa, Florida, U. S. A. ,** March 13-15, 2016.

2) **M. Aydogan**, "Coefficient Inequality for Starlike Functions", 5th European Seminar on Computing , **Pilsen, Czech Republic**, June 5 - 10, 2016.

3) **M. Aydogan**, Z. Moayyerizadeh, S. Rezapour "On new nonlinear techniques for solving of self-adjoint finite difference equation", Portuguese Meeting in Biomathematics, University of Beira Interior, **Covilha, Portugal**, Oct. 13-14, 2016.

4) **M. Aydogan**, "On dimension of the set of solutions of a fractional differential inclusion via the Caputo-Hadamard derivative", International Conference on Abstract and Applied Analysis**, Rome, Italy**, Nov. 4-7, 2016.

4 presentations in international scientific meetings,

4 in journal publications list.

e) Ulusal bilimsel toplantılarda sunulan bildiriler
Notifications presented in national scientific meetings

f) Teknik raporlar, kısa notlar ve diğer yazılı iletişimler
Technical reports, short notes, and other written communications

2) Tezler ve Bitirme Projeleri;
Thesis and Final Projects;

Yüksek lisans ve doktora tezleri ile bitirme projeleri, öğrencinin ve tezin adı belirtilerek listelenmelidir. Tezlerin tamamlanmış veya devam ediyor durumda olmaları belirtilmelidir.

Theses of MSc., PhD. and final year projects should be listed together with the name of student and name of thesis. It must be stated whether the thesis is completed or still being continued.

3) Yazılım ve Donanım Ürünleri;
Software and Hardware Products;
Yazılımlar listelenerek, donanım ürünleri ise şema veya resimlendirilerek sunulmalıdır.
Sofware should be listed and hardware products should be presented with shemas or pictures.

4) Patentler, adı ve numaraları ile belirtilmelidir.
Patents should be specified with their name and numbers.

EKLER
APPENDIX

Teknik raporun ekinde ürünler listesinde belirtilen Bilimsel Araştırma Projeleri tarafından söz konusu proje kodu ile desteklenmiş yazılı ürünlerin birer kopyası sunulmalıdır.

In the technical report's appendix, a copy for each written product that is indicated in the products list should be provided.

Ürün olarak yalnız tez veya bitirme projeleri belirtilmişse bu ürünlerin sadece kapak sayfaları sunulmalıdır.

If the product is specified solely as a thesis or a final year project, only the cover pages of these products should be provided.

LIST

1- 4 Published articles.

2- 4 Published international conference proceeding.