

## Prof. FİKRIYE NURAY YILMAZ

### Personal Information

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### International Researcher IDs

ScholarID: EA9oBKUAAAAJ

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Publons / Web Of Science ResearcherID: AAX-1508-2020

ScopusID: 55795348100

Yoksis Researcher ID: 122079

### Education Information

Doctorate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Mathematics, Turkey 2004 - 2011

Undergraduate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Mathematics, Turkey 1999 - 2004

### Foreign Languages

English, C1 Advanced

### Research Areas

Differential Equations, Partial Differential Equations, Optimization, Numerical Analysis

### Academic Titles / Tasks

Professor, Gazi University, Fen Fakültesi, Matematik, 2023 - Continues

Associate Professor, Gazi University, Fen Fakültesi, Matematik, 2018 - 2023

Lecturer PhD, Gazi University, Fen Fakültesi, Matematik, 2014 - 2018

Research Assistant, Gazi University, Fen Fakültesi, Matematik, 2006 - 2014

### Courses

Linear Algebra, Undergraduate, 2017 - 2018, 2016 - 2017

Mathematics II, Undergraduate, 2017 - 2018

Lineer Cebir, Undergraduate, 2017 - 2018, 2016 - 2017

Matematik I, Undergraduate, 2017 - 2018, 2016 - 2017

Differential Equations, Undergraduate, 2017 - 2018, 2016 - 2017

Diferensiyel Denklemler, Undergraduate, 2017 - 2018

Sayısal Çözümleme, Undergraduate, 2016 - 2017

Nümerik Analiz, Postgraduate, 2016 - 2017

Kısmi Türevli Denklemlerin Akışkanlar Mekaniğindeki Uygulamaları, Postgraduate, 2016 - 2017

Diferansiyel Denklemler, Undergraduate, 2016 - 2017

## Advising Theses

YILMAZ F. N., Numerical Solutions Of Stochastic Control Problems And Financial Applications, Postgraduate, Y.SARGIN(Student), 2019

YILMAZ F. N., Solution Of Stochastic Differential Equations By Runge-Kutta Method, Postgraduate, Z.YETKİN(Student), 2019

YILMAZ F. N., Stokastik kontrol problemlerin nümerik çözümleri ve finansal uygulamaları, Postgraduate, Y.SARGIN(Student), 2019

YILMAZ F. N., Numerical Solutions Of Stochastic Differential Equations And Stability, Postgraduate, F.TÜRKKAN(Student), 2019

YILMAZ F. N., Stochastic Heat Equation And Numerical Solution, Postgraduate, E.CENGİZHAN(Student), 2019

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Weak Second-Order Conditions of Runge–Kutta Method for Stochastic Optimal Control Problems**  
YILMAZ F. N., Öz Bakan H., Weber G.  
Journal of Optimization Theory and Applications, vol.202, no.1, pp.497-517, 2024 (SCI-Expanded)
- II. **On an optimal control problem of the Leray- $\alpha$  model**  
Hacat G., ÇIBİK A. B., Yılmaz F. N., Kaya S.  
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, vol.436, 2024 (SCI-Expanded)
- III. **Error estimates for the optimal control of Navier-Stokes equations using curvature based stabilization**  
Hacat G., Yılmaz F. N., Cibik A. B., Kaya S.  
APPLIED MATHEMATICS AND COMPUTATION, vol.430, 2022 (SCI-Expanded)
- IV. **An efficient algorithm for stochastic optimal control problems by means of a least-squares Monte-Carlo method**  
Oz Bakan H., Yılmaz F. N., Weber G.  
OPTIMIZATION, vol.71, no.11, pp.3133-3146, 2022 (SCI-Expanded)
- V. **Strong-order conditions of Runge-Kutta method for stochastic optimal control problems**  
Yılmaz F. N., Bakan H. O., Weber G.  
APPLIED NUMERICAL MATHEMATICS, vol.157, pp.470-489, 2020 (SCI-Expanded)
- VI. **Minimal truncation error constants for Runge-Kutta method for stochastic optimal control problems**  
Bakan H. O., YILMAZ F. N., Weber G.  
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, vol.331, pp.196-207, 2018 (SCI-Expanded)
- VII. **Variational multiscale method for the optimal control problems of convection-diffusion-reaction equations**  
ÇIBİK A. B., YILMAZ F. N.  
TURKISH JOURNAL OF MATHEMATICS, vol.42, no.1, pp.164-180, 2018 (SCI-Expanded)
- VIII. **A projection-based variational multiscale method for the optimal control problems governed by the stationary Navier-Stokes equations**  
YILMAZ F. N., Cibik A. B.  
APPLIED NUMERICAL MATHEMATICS, vol.106, pp.116-128, 2016 (SCI-Expanded)
- IX. **Semi-discrete a priori error analysis for the optimal control of the unsteady Navier-Stokes**

### **equations with variational multiscale stabilization**

YILMAZ F. N.

APPLIED MATHEMATICS AND COMPUTATION, vol.276, pp.127-142, 2016 (SCI-Expanded)

- X. **Optimal boundary control of the unsteady Burgers equation with simultaneous space-time discretization**  
KARASÖZEN B., YILMAZ F. N.  
OPTIMAL CONTROL APPLICATIONS & METHODS, vol.35, no.4, pp.423-434, 2014 (SCI-Expanded)
- XI. **An all-at-once approach for the optimal control of the unsteady Burgers equation**  
YILMAZ F. N., KARASÖZEN B.  
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, vol.259, pp.771-779, 2014 (SCI-Expanded)
- XII. **Solving optimal control problems for the unsteady Burgers equation in COMSOL multiphysics**  
Yilmaz F. N., KARASÖZEN B.  
Journal of Computational and Applied Mathematics, vol.235, no.16, pp.4839-4850, 2011 (SCI-Expanded)

### **Articles Published in Other Journals**

- I. **A discrete optimality system for an optimal harvesting problem**  
Bakan H. O., YILMAZ F. N., Weber G.  
COMPUTATIONAL MANAGEMENT SCIENCE, vol.14, no.4, pp.519-533, 2017 (ESCI)
- II. **Brezzi Pitkaranta stabilization and a priori error analysis for the Stokes Control**  
ÇIBIK A. B., YILMAZ F. N.  
An international journal of optimization and control, vol.7, no.1, pp.75-82, 2017 (Peer-Reviewed Journal)
- III. **Simulation of stochastic optimal control problems with symplectic partitioned Runge Kutta scheme**  
YILMAZ F. N., ÖZ H., WEBER G. W.  
Dynamics of Continuous, Discrete and Impulsive Systems: Series B: Applications & Algorithms, vol.22, pp.425-440, 2015 (Peer-Reviewed Journal)

### **Books & Book Chapters**

- I. **Itô–Taylor Expansions for Systems of Stochastic Differential Equations with Applications to Stochastic Partial Differential Equations**  
Yılmaz F. N., Öz Bakan H., Weber G. W.  
in: Modeling, Dynamics, Optimization and Bioeconomics II , Alberto A. PintoDavid Zilberman, Editor, Springer, London/Berlin , London, pp.513-532, 2017
- II. **Change of Time Method and Stochastic Taylor Expansion with Computation of Expectation**  
YILMAZ F. N., ÖZ H., WEBER G. W.  
in: Modeling Optimization Dynamics and Bioeconomy, , Editor, Springer, pp.739-753, 2014

### **Refereed Congress / Symposium Publications in Proceedings**

- I. **Stokastik Optimal Kontrol Problemlerinde Runge-Kutta Yöntemi**  
YILMAZ F. N.  
34. Ulusal Matematik Sempozyumu, 31 August - 03 September 2022
- II. **RUNGE-KUTTA METHOD FOR STOCHASTIC OPTIMAL CONTROL PROBLEMS AND WEAK ORDER CONDITIONS**  
YILMAZ F. N.  
9th International Congress on Fundamental and Applied Sciences, 28 - 30 June 2022
- III. **Comparison of the stabilized finite element solutions of optimal control of convection diffusion**

## **equation**

YILMAZ F. N.

International Conference on Applied Mathematics in Engineering (ICAME18), 27 June 2018

- IV. **Stabilization of optimal control of Navier-Stokes Equations**  
YILMAZ F. N.  
International conference on Mathematical Advances and Application, 11 May 2018
- V. **Numerical solutions of optimal control problems for microwave heating**  
Yilmaz a., Mahariq I., YILMAZ F. N.  
ThiIER International Conference on Applied Physics and Mathematics, 30 May 2016
- VI. **Deriving the discrete optimal control problem of stochastic partial differential equations by Runge Kutta method with numerical applications**  
YILMAZ F. N., ÖZ H., WEBER G. W.  
International conference on mathematics and mathematics education, 12 - 14 May 2016
- VII. **Optimal Control of Stochastic Heat Equation with Symplectic Partitioned Runge Kutta Scheme**  
YILMAZ F. N., ÖZ H., WEBER G. W.  
14th International Workshop on Dynamical Systems and Applications, Ankara, 29 June 2015
- VIII. **Optimal control problems of stochastic flows with Runge Kutta schemes**  
YILMAZ F. N.  
International Conference on Mathematics and Mechanics, ICMM 2015 Paris, 27 - 28 April 2015
- IX. **All at once approach with Preconditioning Optimal Boundary Control of Burgers Equation**  
YILMAZ F. N., KARASÖZEN B.  
International Conference on Applied and Computational Mathematics, METU, Ankara, 03 October 2012
- X. **All at once method for Optimal Boundary Control of Burgers Equation**  
YILMAZ F. N., KARASÖZEN B.  
International Conference on Applied Analysis and Algebra, İstanbul, 29 June 2011

## **Supported Projects**

Kaya Merdan S., Yılmaz F. N., Çıbık A. B., TÜBİTAK Project, Investigation of Mathematical and Physical Analysis and Effective Computational Methods of Efficient Algorithms Based on Time Filtering for Optimal Control of Turbulent Flows, 2020 - 2023

## **Metrics**

Publication: 27

Citation (WoS): 56

Citation (Scopus): 68

H-Index (WoS): 4

H-Index (Scopus): 5

## **Scholarships**

TÜBİTAK 2214, TÜBİTAK, 2007 - 2008

## **Non Academic Experience**

Max-Planck Institute for Dynamics of Complex Systems, Magdeburg, Almanya  
University of Houston, USA