



KAYA MERDAN S., Second order numerical methods for Navier-Stokes and Darcy-Brinkman equations, Doktora, M.DEMİR(Öğrenci), 2022

Kaya Merdan S., Mathematical modelling of blood flow through arteries and investigation of some pathological cases in cardiovascular system using grad-div stabilization, Yüksek Lisans, İ.TAHİR(Öğrenci), 2019

KAYA MERDAN S., Reduced order modelling for multiphysics problems, Doktora, F.GÜLER(Öğrenci), 2018

KAYA MERDAN S., Analysis of a projection-based variational multiscale method for a linearly extrapolated BDF2 time discretization of the navier-stokes equations, Yüksek Lisans, D.VARGÜN(Öğrenci), 2018

KAYA MERDAN S., Numerical methods for multiphysics flow problems, Doktora, M.AKBAŞ(Öğrenci), 2016

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KAYA MERDAN S., Numerical analysis of a projection-based stabilization method for the natural convection problems, Doktora, A.BAYRAM(Öğrenci), 2011

KAYA MERDAN S., Modern mathematical methods in modeling and dynamics of regulatory systems of gene-environment networks, Doktora, Ö.DEFTERLİ(Öğrenci), 2011

## Jüri Üyelikleri

Doktora Tez İzleme Komitesi (TİK) Üyeliği, Doktora Tez İzleme Komitesi (TİK) Üyeliği, Orta Doğu Teknik Üniversitesi, Aralık, 2021

Doktora Tez İzleme Komitesi (TİK) Üyeliği, Doktora Tez İzleme Komitesi (TİK) Üyeliği, Gazi Üniversitesi, Aralık, 2021

## SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

- I. **On an optimal control problem of the Leray- $\alpha$  model**  
Hacat G., Çıbık A. B., Yılmaz F. N., Kaya Merdan S.  
Journal of Computational and Applied Mathematics, cilt.436, 2024 (SCI-Expanded)
- II. **Deferred correction method for the continuous data assimilation model**  
AĞGÜL M., Çıbık A., Eroglu F. G., KAYA MERDAN S.  
Computer Methods in Applied Mechanics and Engineering, cilt.415, 2023 (SCI-Expanded)
- III. **An Improved Arrow-Hurwicz Method for the Steady-State Navier-Stokes Equations**  
Takhirov A., Çıbık A. B., Eroğlu F. G., Kaya Merdan S.  
Journal of Scientific Computing, cilt.96, sa.2, 2023 (SCI-Expanded)
- IV. **Artificial compression method for MHD system in Elsässer variables**  
Aggul M., Eroglu F. G., Merdan S.  
Applied Numerical Mathematics, cilt.185, ss.72-87, 2023 (SCI-Expanded)
- V. **Time filtered second order backward Euler method for EMAC formulation of Navier-Stokes equations**  
DEMİR M., Çıbık A., KAYA MERDAN S.  
Journal of Mathematical Analysis and Applications, cilt.516, sa.2, 2022 (SCI-Expanded)
- VI. **Error estimates for the optimal control of Navier-Stokes equations using curvature based stabilization**  
Hacat G., Yılmaz F. N., Çıbık A. B., Kaya Merdan S.  
Applied Mathematics and Computation, cilt.430, 2022 (SCI-Expanded)
- VII. **On the performance of curvature stabilization time stepping methods for double-diffusive natural convection flows in the presence of magnetic field**  
Cibik A., Eroglu F. G., KAYA MERDAN S.  
Numerical Algorithms, cilt.88, sa.1, ss.475-498, 2021 (SCI-Expanded)
- VIII. **Defect-deferred correction method based on a subgrid artificial viscosity model for fluid-fluid interaction**

- AĞGÜL M., Kaya S.  
Applied Numerical Mathematics, cilt.160, ss.178-191, 2021 (SCI-Expanded)
- IX. **An analysis of a linearly extrapolated BDF2 subgrid artificial viscosity method for incompressible flows**  
DEMİR M., Kaya S.  
Applied Numerical Mathematics, cilt.156, ss.140-157, 2020 (SCI-Expanded)
- X. **A projection based variational multiscale method for a fluid–fluid interaction problem**  
AĞGÜL M., EROĞLU F. G., Kaya S., Labovsky A. E.  
Computer Methods in Applied Mechanics and Engineering, cilt.365, 2020 (SCI-Expanded)
- XI. **A second order decoupled penalty projection method based on deferred correction for MHD in Elsasser variable**  
Erkmen D., Kaya S., Cibik A.  
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- XII. **Analysis of Second Order Time Filtered Backward Euler Method for MHD Equations**  
Cibik A., EROĞLU F. G., Kaya S.  
Journal of Scientific Computing, cilt.82, sa.2, 2020 (SCI-Expanded)
- XIII. **LONG TIME STABILITY OF A LINEARLY EXTRAPOLATED BLENDED BDF SCHEME FOR MULTIPHYSICS FLOWS**  
Cibik A., Eroglu F. G., Kaya S.  
INTERNATIONAL JOURNAL OF NUMERICAL ANALYSIS AND MODELING, cilt.17, sa.1, ss.24-41, 2020 (SCI-Expanded)
- XIV. **Two approaches to creating a turbulence model with increased temporal accuracy**  
Aggul M., Kaya S., Labovsky A. E.  
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- XV. **POD-ROM for the Darcy-Brinkman equations with double-diffusive convection**  
Eroglu F. G., Kaya S., Rebholz L. G.  
JOURNAL OF NUMERICAL MATHEMATICS, cilt.27, ss.123-139, 2019 (SCI-Expanded)
- XVI. **A family of second order time stepping methods for the Darcy-Brinkman equations**  
Cibik A., DEMİR M., KAYA MERDAN S.  
JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS, cilt.472, sa.1, ss.148-175, 2019 (SCI-Expanded)
- XVII. **FINITE ELEMENT ERROR ANALYSIS OF A MANTLE CONVECTION MODEL**  
John V., KAYA MERDAN S., Novo J.  
INTERNATIONAL JOURNAL OF NUMERICAL ANALYSIS AND MODELING, cilt.15, ss.677-698, 2018 (SCI-Expanded)
- XVIII. **A modular regularized variational multiscale proper orthogonal decomposition for incompressible flows**  
Eroglu F. G., Kaya S., Rebholz L. G.  
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- XIX. **On the stability at all times of linearly extrapolated BDF2 timestepping for multiphysics incompressible flow problems**  
AKBAŞ M., KAYA S., Rebholz L. G.  
NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS, cilt.33, sa.4, ss.999-1017, 2017 (SCI-Expanded)
- XX. **NUMERICAL ANALYSIS AND TESTING OF A FULLY DISCRETE, DECOUPLED PENALTY-PROJECTION ALGORITHM FOR MHD IN ELSASSER VARIABLE**  
AKBAŞ M., KAYA MERDAN S., MOHEBUJJAMAN M., rebholz l.  
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- XXI. **Analysis of Model Variance for Ensemble Based Turbulence Modeling**  
Jiang N., Kaya S., Layton W.  
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- XXII. **An Explicitly Decoupled Variational Multiscale Method for Incompressible, Non-Isothermal Flows**  
Belenli M. A., Kaya S., Rebholz L. G.

- COMPUTATIONAL METHODS IN APPLIED MATHEMATICS, cilt.15, sa.1, ss.1-20, 2015 (SCI-Expanded)
- XXIII. **On Crank-Nicolson Adams-Bashforth timestepping for approximate deconvolution models in two dimensions**  
Kaya S., Manica C. C., Rebholz L. G.  
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- XXIV. **A subgrid stabilization finite element method for incompressible magnetohydrodynamics**  
Belenli M. A., KAYA MERDAN S., Rebholz L. G., Wilson N. E.  
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- XXV. **Finite element analysis of a projection-based stabilization method for the Darcy-Brinkman equations in double-diffusive convection**  
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- XXVI. **CONVERGENCE ANALYSIS OF THE FINITE ELEMENT METHOD FOR A FUNDAMENTAL MODEL IN TURBULENCE**  
KAYA MERDAN S., C C M.  
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- XXVII. **A projection-based stabilized finite element method for steady-state natural convection problem**  
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- XXVIII. **Finite element error analysis for a projection-based variational multiscale method with nonlinear eddy viscosity**  
John V., KAYA MERDAN S., Kindl A.  
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- XXIX. **Finite element error analysis of a variational multiscale method for the Navier-Stokes equations**  
Volker J., KAYA MERDAN S.  
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- XXX. **Finite element error analysis of a zeroth order approximate deconvolution model based on a mixed formulation**  
Carolina Cardoso M., KAYA MERDAN S.  
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- XXXI. **A two-grid stabilization method for solving the steady-state Navier-Stokes equations**  
KAYA MERDAN S., Rivière B.  
NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS, cilt.22, sa.3, ss.728-743, 2006 (SCI-Expanded)
- XXXII. **A two-level variational multiscale method for convection-dominated convection-diffusion equations**  
Volker J., KAYA MERDAN S., Layton W.  
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- XXXIII. **Subgrid stabilized defect correction methods for the Navier-Stokes equations**  
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- XXXIV. **A finite element variational multiscale method for the Navier-Stokes equations**  
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- XXXV. **A discontinuous subgrid eddy viscosity method for the time-dependent Navier-Stokes equations**  
KAYA MERDAN S., Béatrice R.  
SIAM JOURNAL ON NUMERICAL ANALYSIS, cilt.43, sa.4, ss.1572-1595, 2005 (SCI-Expanded)

## **Diğer Dergilerde Yayınlanan Makaleler**

- I. On the extrapolated VMS-POD method for incompressible flows**  
GÜLER EROĞLU F., KAYA MERDAN S.

Computer Methods in Materials Science, cilt.19, ss.70-77, 2019 (Scopus)

- II. **Decoupled Modular Regularized VMS-POD for Darcy-Brinkman Equations**  
Güler Eroğlu F., Kaya Merdan S., Rebholz L. G.  
IAENG International Journal of Applied Mathematics, cilt.49, ss.134-144, 2019 (Scopus)

## Kitap & Kitap Bölümleri

- I. **An Extrapolated Crank Nicholson VMS-POD Method for Darcy Brinkman Equations**  
GÜLER EROĞLU F., KAYA MERDAN S.  
Numerical Solutions of Realistic Nonlinear Phenomena. Nonlinear Systems and Complexity, Machado J., Özdemir N., Baleanu D., Editör, Springer, Cham, cham, ss.25-51, 2020
- II. **Numerical Studies on a Second Order Explicitly Decoupled Variational Multiscale Method**  
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- III. **Numerical Analysis of a Variational Multiscale Method for Turbulence**  
KAYA MERDAN S.  
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## Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar

- I. **ON THE EXTRAPOLATED VMS-POD METHOD FOR INCOMPRESSIBLE FLOWS**  
Güler Eroğlu F., Kaya Merdan S.  
5th ECCOMAS Young Investigators Conference, Krakow, Polonya, 1 - 06 Eylül 2019, cilt.19, ss.70-77
- II. **A Numerical Study of a Modular Sparse Grad-Div Stabilization Method for Boussinesq Equations**  
DEMİR M., KAYA MERDAN S.  
8th International Conference on Mathematical Modeling in Physical Science, 26 - 29 Ağustos 2019, cilt.2019, ss.1-4
- III. **Numerical Investigation of the Boussinesq equations through a Subgrid Artificial Viscosity Method**  
DEMİR M., KAYA MERDAN S.  
The European Conference on Numerical Mathematics and Advanced Applications (ENUMATH 2019), Egmond aan Zee, Hollanda, 30 Eylül - 04 Ekim 2019
- IV. **A Review of Variational Multiscale Methods for Multiphysics Flow Problems**  
KAYA MERDAN S.  
International Meeting on Applied Mathematics Evolution, 16 - 18 Nisan 2019
- V. **Numerical Aspects of POD-Based Reduced-Order Modeling for Darcy-Brinkman Equations**  
GÜLER EROĞLU F., KAYA MERDAN S.  
Workshop on Computational Science and Engineering, Ankara, Türkiye, 20 - 21 Ekim 2018
- VI. **A Numerical Study of Second Order Time Stepping Methods for the Boussinesq Equations**  
DEMİR M., ÇIBİK A. B., KAYA MERDAN S.  
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- VII. **A Projection-Based VMS Method on Linearly Extrapolated BDF2 Time-stepping Scheme for Navier-Stokes Equations**  
KAYA MERDAN S., Vargün D.  
BEYOND: Workshop on Computational Science and Engineering, Türkiye, 20 - 21 Ekim 2018
- VIII. **penalty projection algorithm for MHD in Elsasser Variable,**  
KAYA MERDAN S.  
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- IX. **A Numerical Investigation of VMS-POD Model for Darcy-Brinkman Equations**  
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- X. **Numerical analysis of a Family of Second Order Time Stepping Methods for Boussinesq Equations**  
ÇIBIK A. B., DEMİR M., KAYA MERDAN S.  
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- XI. **Numerical Study on Blood Flow Modelling in Arteries**  
KAYA MERDAN S., ökten i. t.  
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- XII. **Proper Orthogonal Decomposition Method for the Darcy-Brinkman Equations**  
GÜLER EROĞLU F., KAYA MERDAN S.  
International Conference on Applied Mathematics in Engineering, 27 - 29 Haziran 2018
- XIII. **Numerical Analysis of Second Order Time Stepping Methods for the Natural Convection Problems**  
Demir M., Çıbık A. B., Kaya Merdan S.  
International Conference on Applied Mathematics in Engineering,, Balıkesir, Türkiye, 27 - 29 Haziran 2018, ss.100
- XIV. **Doşal Konveksiyon Problemleri için ikinciMertebeden Zaman Admlamas YöntemleriAilesinin Saysal Analizi**  
DEMİR M., ÇIBIK A. B., KAYA MERDAN S.  
13. Ankara Matematik Günleri, Türkiye, 27 - 28 Mayıs 2018
- XV. **Modeling of blood flow in arteies with Navier-Stokes equations**  
KAYA MERDAN S.  
5th International Conference on Complex Dynamical Systems in Life sciences Modeling and Analysis, 10 - 12 Mayıs 2018
- XVI. **Variational Multiscale Proper Orthogonal Decomposition with Modular Regularization**  
GÜLER EROĞLU F., KAYA MERDAN S., Rebholz L.  
CMMSE Spain 2017, Cadiz, İspanya, 4 - 08 Temmuz 2017, ss.854-857
- XVII. **Sıkıştırılmaz akışlar içinprojeksiyona bağlı çok ölçekli varyasyonel uygun dik ayrıştırma metodu**  
GÜLER EROĞLU F., KAYA MERDAN S.  
AMG Turkey 2017, Ankara, Türkiye, 25 - 26 Mayıs 2017, ss.20
- XVIII. **Projeksiyona Dayalı Çok ÖlçekliVaryasyonel Uygun Dik Ayrıştırma metodunun Modüler Regülarizasyonu**  
GÜLER EROĞLU F., KAYA MERDAN S.  
IV.Kadın Matematikçiler Derneği Çalıştayı, Türkiye, 28 - 29 Nisan 2017
- XIX. **Numerical Analysis of a Fully Discrete Decoupled Penalty -Projection Algorithm for MHD in Elsässer Variables.**  
KAYA MERDAN S.  
Fall Western Sectional Meeting (AMS-Meeting #1122), 8 - 09 Ekim 2016
- XX. **Projeksiyona Bağlı Modüler Regülarizasyonlu ve Ortogonal Ayrıştırma Metodun Sayısal Analizi**  
Güler F., KAYA MERDAN S.  
11. Ankara Matematik Günleri, Türkiye, 26 - 27 Mayıs 2016, ss.1
- XXI. **Numerical Studies on a Second Order Explicitly Decoupled Variational Multiscale Method**  
Akbas M., KAYA MERDAN S., Rebholz L.  
European Conference on Numerical Mathematics and Advanced Applications (ENUMATH), Ankara, Türkiye, 14 - 18 Eylül 2015, cilt.112, ss.115-122

## Bilirkişi Raporları

### I. Etik İncelemesi

Kaya Merdan S.

Fen ve Mühendislik Bilimsel Araştırma Yayın Etiği Komisyonu, ss.3, Ankara, 2020

## Desteklenen Projeler

Kaya Merdan S., Milli Eğitim Müdürlüğü M. I., Erasmus Projesi, Gençler için yapay zeka eğitimi, 2020 - 2023  
KAYA MERDAN S., Yükseköğretim Kurumları Destekli Proje, Zaman adimli metotların doğal konveksiyon problemleri için sayısal incelemesi, 2018 - 2019  
KAYA MERDAN S., Yükseköğretim Kurumları Destekli Proje, BDF2 diskterizasyonlu SUPG sonlu eleman yönteminin sayısal analizi üzerine, 2017 - 2017  
Kaya Merdan S., Yükseköğretim Kurumları Destekli Proje, Grup Ortalamalı Turbulansli Akış Metodunun Sayısal İncelemesi, 2016 - 2016  
KAYA MERDAN S., Yükseköğretim Kurumları Destekli Proje, Projenin Adı: Grup Ortalamalı Turbulansli Akış Metodunun Sayısal İncelemesi, 2016 - 2016  
KAYA MERDAN S., Yükseköğretim Kurumları Destekli Proje, Manyeto Hidrodinamik Akış İçin Projeksiyona-Dayalı-Kararlı Metodonun Sayısal İncelemesi, 2012 - 2012

## Bilimsel Dergilerdeki Faaliyetler

Communications Faculty of Sciences University of Ankara Series A1 Mathematics and Statistics, Editörler Kurulu Üyesi, 2023 - Devam Ediyor

## Bilimsel Hakemlikler

Diferensiyel denklemler, Tanınmış Yayınevleri tarafından basılan bilimsel/mesleki kitap, Temmuz 2022  
COMPUTERS & MATHEMATICS WITH APPLICATIONS, SCI Kapsamındaki Dergi, Mart 2020  
NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS, SCI Kapsamındaki Dergi, Mart 2020  
Yükseköğretim Kurumları Destekli Proje, BAP Araştırma Projesi, Orta Doğu Teknik Üniversitesi, Türkiye, Aralık 2018  
COMPUTERS & MATHEMATICS WITH APPLICATIONS, SCI Kapsamındaki Dergi, Kasım 2018  
BALIKESİR ÜNİVERSİTESİ FEN BİLİMLERİ ENSTİTÜSÜ DERGİSİ, Hakemli Bilimsel Dergi, Ağustos 2018  
TÜBİTAK Projesi, 1001 - Bilimsel ve Teknolojik Araştırma Projelerini Destekleme Programı, Türkiye, Temmuz 2018

## Bilimsel Danışmanlıklar

TÜBİTAK, Bilimsel Projeler İçin Yapılan Danışmanlık, Orta Doğu Teknik Üniversitesi, Fen Edebiyat Fakültesi, Matematik Bölümü, Türkiye, 2018 - Devam Ediyor

## Etkinlik Organizasyonlarındaki Görevler

Bozkaya C., Kaya Merdan S., TKMD Lisansüstü Yaz Okulu IV, Bilim / Sanat Kampı veya Yaz Okulu Organizasyonu, Ankara, Türkiye, Haziran 2019

## Metrikler

Yayın: 64  
Atıf (WoS): 715  
Atıf (Scopus): 806  
H-İndeks (WoS): 13  
H-İndeks (Scopus): 14

## **Ödüller**

Kaya Merdan S., Erođlu F. G., Rebholz L., The Best student award of 2018 International Conference of Applied and Engineering Mathematics, International Association Of Engineers, Temmuz 2018

## **Akademi Dışı Deneyim**

ODTÜ

UNiversity of Pittsburgh

Illinois Institute of Technology

Illinois Institute of Technology

University of Pittsburgh

University of Pittsburgh

Ankara University

Ankara Üniversitesi