DOHYUN KIM

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Nationality: **Korean**

RESEARCH INTEREST

Finite Element Methods, Polygonal Finite Element Methods, Nonconforming Methods, Fluid Dynamics, Blood Flow Simulation, Scientific Computing

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher | Hong Kong Centre for Cerebro-Cardiovascular Health Engineering

Supervisor: Raymond Chan, City University of Hong Kong

Co-supervisor: Lina Zhao, City University of Hong Kong

2021 DEC – PRESENT

Postdoctoral Researcher - Computational Science and Engineering | Yonsei University, South Korea

Supervisor: Eun-Jae Park, Yonsei University

2021 MAR – 2021 DEC

EDUCATION

Ph.D. Computational Science and Engineering – Mathematics | Yonsei University, South Korea

Advisor: Eun-Jae Park, Yonsei University

2015 MAR – 2021 FEB

B.S. Mathematics | Hanyang University, South Korea

2011 MAR – 2015 FEB

AWARDS AND GRANTS

Excellent Dissertation Award | Korean Mathematical Society 2021

Excellent Thesis Award | Yonsei University 2021

Excellent Paper Encouragement Award | Yonsei University 2019

Poster Excellence Award| KSIAM 2017

KSIAM-MathWorks Problem Challenge-Award of Excellence | KSIAM 2018

BK21Plus Scholarship | Brain Korea 21 Plus (2015-2020)

Research Competency Scholarship | Yonsei University 2019

PUBLICATIONS

Staggered DG method with small edges for Darcy flows in fractured porous media
Journal of Scientific Computing (IF: 2.592)
Lina Zhao, **Dohyun Kim**, Eun-Jae Park, Eric Chung

Review and implementation of staggered DG methods on polygonal meshes
Journal of the Korean Society and Applied Mathematics, 25, pp. 66-81 (2021)
Dohyun Kim, Lina Zhao, Eun-Jae Park

Polygonal staggered discontinuous Galerkin methods
Oberwolfach Reports, 3/2021, 25-27 (2021)
Eun-Jae Park, Lina Zhao, **Dohyun Kim**

Morley finite element methods for the stationary quasi-geostrophic equation
Computer Methods in Applied Mechanics and Engineering (IF: 6.756), 375, 113639 (2021)
Dohyun Kim, Amiya K. Pani, Eun-Jae Park

Staggered DG methods for the pseudostress-velocity formulation of the Stokes equations on general meshes
SIAM Journal on Scientific Computing (IF: 2.373), 42, pp. A2537-A2560 (2020)
Dohyun Kim, Lina Zhao, Eun-Jae Park

Error estimates of B-spline based finite-element methods for the stationary quasi-geostrophic equations of the ocean
Computer Methods in Applied Mechanics and Engineering (IF: 6.756), 335, pp. 255-272 (2018)
Dohyun Kim, Tae-Yeon Kim, Eun-Jae Park, Dong-wook Shin

*Impact factor (IF) is based on the 2020 Journal Impact Factor from Journal Citation Report

💼 ORGANIZED CONFERENCE

Minisymposium: Recent developments in mathematical analysis and numerics for incompressible flow and related problems |2022 SIAM Annual Meeting
June 11-15, 2022, Pittsburgh, Pennsylvania, USA (Online-Offline Hybrid)

💼 INVITED TALKS

Staggered DG Methods on General Meshes | SIAM Conference on Mathematical & Computational Issues in the Geosciences
June 21-24, 2021, Italy (Online)

Staggered DG method for Darcy flows in fractured porous media on general meshes | International Conference on Computational Science 2021
June 16-18, 2021, Krakow, Poland (Online)

Staggered discontinuous Galerkin methods for the Stokes equations on general polygonal meshes | The 26th International Domain Decomposition Conference
December 7-12, 2020, Hong Kong, China (Online)

Error estimates of B-spline based finite-element methods for the stationary quasi-geostrophic equations of the ocean | The Week of Applied Mathematics and Mathematical Modelling
October 7-11, 2019, Vladivostok, Russia

A C0-discontinuous Galerkin method for quasi-geostrophic equations | International Conference on Computational Mathematics – Advances in Computational PDEs
September 29-October 2, 2018, Seoul, South Korea

💼 CONFERENCES

Pressure robust staggered DG methods | KSIAM 2021 Annual Meeting
Dec 2-5, 2021, Busan, Korea (Online-Offline Hybrid)

A staggered DG method for the Darcy flow in fractured porous media on polygonal meshes | International Conference on Spectral and High Order Methods
July 12-16, 2021, Vienna, Austria (Online)

Staggered DG method with small edges for Darcy flows in fractured porous media| KSIAM 2021 Spring Meeting
June 25-27, 2021, Gangneung, South Korea

C0-interior penalty methods for stationary quasi-geostrophic equations | KSIAM 2018 Annual Meeting
November 2-4, 2018, Jeju, South Korea

Finite element methods for wind-driven large scale ocean circulation with spline basis | 2017 KSIAM Annual Meeting
November 3-5, 2017, Busan, South Korea

(POSTER) B-spline based finite element method for a Large scale ocean circulation | KSIAM 2017 Spring Conference Joint with EASIAM
June 23-24, 2017, Seoul, South Korea

Discontinuous Galerkin methods for Hodgkin-Huxley model | 2017 KMS Spring Meeting
April 28-30, 2017, Gwangju, South Korea

COMPUTER SKILLS

- MATLAB
- Python
- C++

NATIONALITY & LANGUAGE

- Advanced level in **English**
- Native proficiency in **Korean**