Deyong Sun

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Address: Beijing Institute of Technology, China

Research Expertise: Isogeometric Analysis, Shape Optimization, Parallel Computation, Viscoelastic Composite Materials, Boundary Element Method

Education Background

09/2018-06/2021	**Beijing Institute of Technology (BIT), China** *MSc* in Computational Mechanics

GPA: 3.43/4 (**89/100**)   **Range:** 1/44

Core modules: Computational Solid Mechanics (96), Mechanics of Composite Materials (90), Design and Applications of Advanced Materials (91), Numerical Analysis (86), Process of Modern Mechanics (88), English Level A for Master Students (92)

09/2014-07/2018	**China University of Petroleum (CUP), China** *BSc* in Petroleum Engineering

GPA: 4.10/5 (**93/100**)   **Range:** 13/194

Core modules: Theoretical Mechanics (99), Material Mechanics (91), Fluid Mechanics (91), Advanced Mathematics (97), Linear algebra (90), College Physics (99), The C Programming Language (94), Mathematical Modelling (93), Probability and Statistics (95)

Skills

Software
- 3D Modelling: **Rhino.**
- Programming Software: **Matlab**, **Fortran**, **Visual Studio**, **Python**, **C++.**
- Post-processing: **Tecplot.**
- FE Modelling Software: **Abaqus.**
- Parallel Computing Software: **ParaCloud**, **Linux**

Language
- IELTS (**7.0**)

Publications

- **Sun D. Y**, Dai R, Dong C.Y, et al, *RI-IGABEM for 2D viscoelastic problems and its application to solid propellant grains.* **Comput. Methods Appl. Mech. Engrg**, 378 (2021) 113737.
- **Sun D.Y**, Dong C.Y, *Shape optimization of heterogeneous materials based on isogeometric boundary element method.* **Comput. Methods Appl. Mech. Engrg**, 370 (2020) 113279.
- **Sun D.Y**, Dong C.Y, *Isogeometric analysis of the new integral formula for elastic energy change of heterogeneous materials.* **J. Comput. Appl. Math**, 382 (2021) 113106.
- Dai R, Dong C.Y, Xu C, **Sun D.Y,** *IGABEM of 2D and 3D liquid inclusions.* **Eng. Anal. Bound. Elem**, 132 (2021) 33-49.
- **Sun D.Y**, Dong C.Y, *RI-IGABEM for viscoelastic analysis.* **Beijing Congress of Theoretical and Applied Mechanics**, (2021)
- **Sun D.Y**, Dong C.Y, *Isogeometric Boundary Element Application based on new elastic energy Increment integral formula.* **Chinese Congress of Theoretical and Applied Mechanics**, (2019).
- Su G.D, Zhao L.L, Zhang P, **Sun D.Y**, et al, *Numerical Simulation of Electric Field in Hydroelectric Simulation Experiment Based on Matlab PDETOOL.* **Research and Exploration in Laboratory**, 36 (2017), 123-126.
- Su G.D, Gu X, Zhao L.L, **Sun D.Y**, et al, *Visual Teaching and Computer-based Experiment of Fluid Flow in Porous Media with PDETOOL of Matlab.* **Research and Exploration in Laboratory**, 36 (2017), 137-142.

Research Experience

06/2020-Present	**Isogeometric Boundary Element Method for Viscoelastic Effects of Solid Propellant**

Research Assistant   Advisor: Professor Chunying Dong

- Simulating the viscoelastic effects of solid propellant by isogeometric boundary element
- Employing Laplace transform and correspondence principle to obtain analytical solutions
- Extending this framework to simulate the fracture and debonding behaviors of viscoelastic-plastic materials in solid propellant

03/2019-06/2020 **Studies on Rapid and Direct Algorithm of Isogeometric Boundary Element for Large Scale Multilayer Complex Coating Structures**

General Program of National Natural Science Foundation of China *Project No.11972085*

Research Assistant Advisor: Professor Chunying Dong

- Obtained 2D and 3D complexed CAD models from Rhino and reconstructed them by Matlab and Fortran according to basic parameters
- Applied the shape optimization analysis based on the gradient-based optimization method (MMA) to elastic problems
- Applied the parallel computing method with Fortran and OPENMP to improve the computing efficiency
- Implemented Rapid and Direct Algorithm to optimize large scale coating structures

06/2018-03/2019 **Isogeometric Boundary Element Method for Turbine Blade Failure in Aeroengines**

General Program of National Natural Science Foundation of China *Project No.11672038*

Research Assistant Advisor: Professor Chunying Dong

- Rebuilt 2D NACA airfoil geometries by NURBS using Matlab
- Implemented Galerkin boundary element method to calculate the potential problem
- Used Lagrange multiplier to deal with Kutta condition in coefficient matrix
- Simulated the fluid-structure coupled behavior of turbine blades
- Compared numerical results with that from traditional panel method and Xfoil

Selected Awards

06/2021	●	Outstanding Master's Thesis	University (***Top 5%***)
06/2021	●	Excellent Graduated Student in Beijing	Province (***Top 5%***)
12/2020	●	Outstanding Graduate Student Model	University (***Top 1%***)
10/2020	●	National Scholarship for Postgraduates	Nationwide (***Top 1%***)
05/2017	●	WUYI Mathematical Modelling League	Province (***Third prize***)
03/2017	●	CUP Computer Skills Competition	University (***Second prize***)
11/2016	●	The Chinese Mathematics Competitions	Nationwide (***Third prize***)
11/2016	●	CUP Mathematical Modelling Competition	University (***Second prize***)
09/2016	●	The First prize Scholarship	University (***Top 1%***)
11/2015	●	The Chinese Mathematics Competitions	Nationwide (***Third prize***)
10/2015	●	CUP Physics Tournament	University (***First prize***)
09/2015	●	CUP Mathematics Competitions	University (***Second prize***)
09/2015	●	ENNGroup Scholarship	University (***Top 1%***)

Social Experience & Hobby

09/2017-09/2018 **Development of Heavy Oil in the Post-steam Era**

National Student Research and Innovation Program

Project Leader Advisor: Associate Professor Xiaohu Dong

- Carried out visual physical simulation experiment of steam injection in heavy oil reservoirs and analysed the spatial distribution of remaining oil
- Adopted reservoir numerical simulation method to study the distribution of

remaining oil in different types of heavy oil reservoirs

09/2016-09/2017 **Tight Oil Development Technology and Economic Feasibility Evaluation**
Beijing Student Research and Innovation Program
Team Leader   Advisor: Professor Shenglai Yang
- Predicted the total production and its decline law of tight oil
- Investigated and built economic evaluation models
- Evaluated the production limits under economic feasibility development

Hobby • Table Tennis, Keep Fit, Tennis, Photography

Contact Information for References

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