

XIANG ZHANG

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EDUCATION

- Ph.D., Civil Engineering** *2017*
Vanderbilt University, Nashville, TN
Advisor: Prof. Caglar Oskay
Research topic: Reduced order modeling and multiscale investigations of high performance alloys
- M.S., Civil Engineering** *2015*
Vanderbilt University, Nashville, TN
Advisor: Prof. Caglar Oskay
Research topic: Eigensrain-based reduced order homogenization for polycrystal plasticity
- M.E., Solid Mechanics** *2012*
Beihang University, China
Advisor: Prof. Jialing Yang
Research topic: Numerical and experimental bird-strike resistance evaluation of aerostructures
- B.E., Engineering Mechanics** *2009*
Northeastern University, China

RESEARCH AREAS AND EXPERTISE

- Multiscale modeling of heterogeneous materials
 - Computational homogenization
 - Reduced order multiscale homogenization
- Crystal plasticity finite element modeling
- Cohesive zone model based intergranular damage modeling
- Crashworthiness analysis of aerostructures by finite element modeling and experimental testing

AWARDS & HONORS

- Finalist, 28th Annual Robert J. Melosh Medal Competition for the Best Student Paper on Finite Element Analysis. Duke University, Durham, NC, 2017.
- Travel Award, 14th U.S. National Congress on Computational Mechanics. Montreal, Canada, 2017.
- Winner, Modeling Inelasticity & Multiscale Behavior Committee Best Student Paper Competition, EMI Conference, Nashville, TN, 2016.
- Best Student Poster Award in Materials Science and Technology category, ANS Winter Meeting and Nuclear Technology Expo, Las Vegas, NV, 2016.
- Peter G. Hoadley Best Paper Award, Department of Civil and Environment Engineering, Vanderbilt University, 2016.

PROFESSIONAL EXPERIENCES

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| • September 2017 - present | Postdoctoral Research Associate, Vanderbilt University |
| • June 2013 - August 2017 | Graduate Research Assistant, Vanderbilt University |
| • August 2012 - May 2013 | Graduate Teaching Assistant, Vanderbilt University |
| • September 2010 - January 2012 | Graduate Research Assistant, Beihang University |

JOURNAL PUBLICATIONS

1. **X. Zhang**, C. Oskay. Sparse and scalable eigenstrain-based reduced order homogenization models for polycrystal plasticity. *Comput. Methods Appl. Mech. Engg.*, 326:241-269, 2017.
2. V. T. Phan, **X. Zhang**, Y. Li, C. Oskay. Microscale modeling of creep deformation and rupture in Alloy 617. *Mech. Mater.*, 114:215-227, 2017.
3. **X. Zhang**, C. Oskay. Eigenstrain based reduced order homogenization for polycrystalline materials. *Comput. Methods Appl. Mech. Engg.*, 297:408-436, 2015.
4. **X. Zhang**, C. Oskay. Polycrystal plasticity modeling of Nickel-based superalloy IN 617 subjected to cyclic loading at high temperature. *Modelling Simul. Mater. Sci. Engg.*, 24:055009, 2016.
5. Y. Liu, **X. Zhang**, A. Pilchak, B. Gockel, C. Oskay. Dislocation density informed multiscale crystal plasticity modeling for fatigue crack initiation in Ti-6242S, to be submitted.
6. **X. Zhang**, C. Oskay. A lattice-spring model for intergranular damage modeling, work in progress.
7. D.Y. Hu, **X. Zhang**. Full-scale crash test and FEM simulation of a crashworthy helicopter seat. *J. Aero. Power*, 27:395-400, 2012.

CONFERENCE PUBLICATIONS

1. **X. Zhang**, C. Oskay. Eigenstrain-based Reduced Order Homogenization Models for Polycrystal Plasticity: Addressing Scalability. *XIV International Conference of Computational Plasticity. Fundamentals and Applications.*, Barcelona, Spain, September 5-7, 2017.
2. **X. Zhang**, V. T. Phan, C. Oskay. Microstructural Creep, Fatigue and Creep-Fatigue modeling of Nickel-based Superalloy Inconel 617 at High Temperature. *Proceedings of the High Temperature Reactor Technology (HTR) Meeting 2016*, Las Vegas, NV, November 7-10, 2016.

CONFERENCE PRESENTATIONS

1. **X. Zhang**, C. Oskay. Eigenstrain-based Reduced Order Homogenization for Polycrystal Plasticity: Addressing Scalability. XIV International Conference of Computational Plasticity, Barcelona, Spain, September, 2017.
2. **X. Zhang**, C. Oskay. Sparse and Scalable Eigenstrain-based Reduced Order Models for Polycrystal Plasticity. U.S. National Congress on Computational Mechanics, Montreal, Canada, July 2017.
3. **X. Zhang**, C. Oskay. Microscale modeling of creep and rupture of IN 617 using cohesive zone-CPFE analysis. Engineering Mechanics Institute Conference, San Diego, CA, June 2017.
4. **X. Zhang**, C. Oskay. Sparse and Scalable Eigenstrain-based Reduced Order Models for Polycrystal Plasticity. Engineering Mechanics Institute Conference, San Diego, CA, June 2017.
5. **X. Zhang**, V. T. Phan, C. Oskay. Microstructural Creep, Fatigue and Creep-Fatigue Modeling of Nickel-based Superalloy IN 617 at High Temperature. ANS 8th International Topical Meeting on High Temperature Reactor Technology, Las Vegas, NV, November 2016.
6. **X. Zhang**, C. Oskay. Accelerated Reduced Order Homogenization of Polycrystal Plasticity. European Mechanics Society Colloquium, Porto, Portugal, September 2016.
7. **X. Zhang**, C. Oskay. Eigenstrain based Reduced Order Homogenization for Polycrystalline Materials. Engineering Mechanics Institute Conference, Nashville, TN, May 2016.
8. **X. Zhang**, Caglar Oskay. Fatigue and Creep-Fatigue Modeling of Alloy 617 at High Temperature. ASME International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
9. **Zhang X.**, Li C., Yang J.L.. Bird-Strike Simulation of a Helicopter Front Fuselage based on SPH Method. Chinese Conference of Theoretical and Applied Mechanics, Harbin, China, August 2011.

PROGRAMMING EXPERTISE

Fortran, Matlab, Python, Linux bash, L^AT_EX.