1 Background

Work Address

Department of Geoscience
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Educational Background

Ph.D.	McMaster University, Hamilton, Ontario, Canada Department of Civil Engineering (2015)
B.Eng.Mgmt.	McMaster University, Hamilton, Ontario, Canada Department of Civil Engineering (2011)

Current Academic Status

Instructor (Geophysics)
Department of Geoscience, University of Calgary

Professional Memberships

Member-in-Training (E.I.T.), The Association of Professional Engineers and Geoscientists of Alberta (APEGA), #220450
Student Member, Canadian Geotechnical Society (CGS)
Student Member, Society for Teaching and Learning in Higher Education (STLHE)

Employment History

Academic:

Jul 2015-present	***Instructor***, Department of Geoscience, University of Calgary
Sep-Dec 2014	***Sessional Faculty*** for Civ Eng 2E03 (Computer Applications in Civil Engineering), Dept. of Civil Engineering, McMaster University
2014-present	***Journal Paper Reviewer*** for Supervisor, Dept. of Civil Engineering, McMaster University
2010-present	***Teaching Assistant***, Dept. of Civil Engineering, McMaster University
2008-2011	***Teaching Assistant***, Engineering 1, McMaster University
2008-2010	***Research Assistant***, Dept. of Civil Engineering, McMaster University

Other:

2007	***Construction Technician***, Golder Associates, Hamilton, Ontario, Canada

Areas of Interest

Research:

Multi-scale and fluid-solid coupled modelling in geomechanics
Numerical modelling of geomaterials using hybrid finite elements
Physical and numerical modelling of slope stability
Soil dynamics including isolation of ground vibration

Teaching:

Applied Mechanics (Statics, Dynamics, Strength of Materials)
Applied Mathematics, Numerical Methods and Computer Applications in Engineering
Finite Element Analysis
Communication Skills in Engineering
Active Learning, Student-Centred Learning, Peer Teaching / Peer Discussion

2 Academic Information

Scholarships

1. NSERC Postgraduate Scholarship PGS D (2012-2015), $21 000/yr., Hydro-mechanical coupled modelling of geomechanics problems using hybrid polygonal finite elements
2. NSERC Postgraduate Scholarship PGS M (2011-2012), $17 500/yr., Earthquake stabilization of natural and constructed soil slopes
3. NSERC Undergraduate Student Research Award (May-Aug 2010), $9500/4 months, Material evaluation and modelling of slopes using nonlinear optimization methods
4. NSERC Undergraduate Student Research Award (May-Aug 2009), $8100/4 months, Material evaluation and modelling of slopes
5. NSERC Undergraduate Student Research Award (May-Aug 2008), $5625/4 months, Resilient modulus testing of pavement subgrade materials

Awards

1. Nominated for Governor General's Gold Medal by Department of Civil Engineering at McMaster University for Doctoral Thesis (2015). Multi-scale modelling of geomechanical behaviour using the Voronoi cell finite element method (VCFEM) and finite-discrete element method (VCFEM-DEM).
2. Canadian Geotechnical Society (Southern Ontario Section), Graduate Student Presentation Competition, 'Second Place' (2015), Modelling the influence of microscale interactions in granular materials on lab and field scale behaviour using VCFEM-DEM.
3. Engineering Mechanics Institute Conference (EMI 2014) Computational Mechanics Poster Competition 'Runner Up' (2014), Prediction of subsurface load distribution due to soil self-weight using Monte Carlo and VCFEM-DEM analysis.

4. Engineering Mechanics Institute Conference (EMI 2014) 'Third Place Poster Award' (2014), Prediction of subsurface load distribution due to soil self-weight using Monte Carlo and VCFEM-DEM analysis.
5. CUPE 3906 TA/RA Award, Faculty of Engineering (2014)
6. McMaster Engineering Society 'Image of an Engineer' Award (2014)
7. McMaster Engineering Society 'Outstanding Teaching Assistant' Award (2013)
8. Canadian Geotechnical Society (Southern Ontario Section), Graduate Student Presentation Competition, 'Second Place' (2012), Influence of inherent anisotropy of soil strength on limit equilibrium slope stability analysis.

Publications

Peer-Reviewed Journal Papers

1. *B. Karchewski*, D. Stolle, A. Pekinasova and P. Guo. Semi-coupled seepage and deformation analysis of earth dams using the hybrid Voronoi cell finite element method, submitted 07/2015 to *Finite Elements in Analysis and Design*.
2. *B. Karchewski*, A. Pekinasova, D. Stolle and P. Guo. Investigation of hybrid polygonal finite element formulation for confined and unconfined seepage, submitted 01/2015 to *International Journal for Numerical and Analytical Methods in Geomechanics*.

Peer-Reviewed Conference Papers

1. *B. Karchewski*, P. Guo and D. Stolle. Multi-scale analysis of deformation modes in granular material using a dynamic hybrid polygonal finite element-discrete element formulation, submitted 07/2015 to the *4th GeoChina International Conference*. [*Note:* Also eligible for consideration for publication in special issue of *International Journal of Geomechanics, ASCE*]
2. *B. Karchewski*, P. Guo and D. Stolle. (2014). Simulation of lab scale tests on granular media using assumed stress polygonal finite elements and nonlinear joint elements, *Proceedings of the 67th Canadian Geotechnical Conference, Sep 28-Oct 1, Regina, SK.*
3. *B. Karchewski*, D. Stolle and P. Guo. (2012). Investigation of key parameters in the design of active isolation trenches for vibrating machinery, *Proceedings of the 65th Canadian Geotechnical Conference, Sep 30-Oct 3, Winnipeg, MB.*
4. *B. Karchewski*, P. Guo and D. Stolle. (2012). Influence of inherent anisotropy of soil strength on limit equilibrium slope stability analysis, *Proceedings of the 65th Canadian Geotechnical Conference, Sep 30-Oct 3, Winnipeg, MB.*
5. *B. Karchewski*, D. Stolle and P. Guo. (2011). Determination of minimum factor of safety using a genetic algorithm and limit equilibrium analysis, *Proceedings of the 64th Canadian Geotechnical Conference and 14th Pan-American Conference on Soil Mechanics and Geotechnical Engineering, October 2-6, Toronto, ON.*

Theses

1. *B. Karchewski*. (2015). Multi-scale modelling of geomechanical behaviour using the Voronoi cell finite element method (VCFEM) and finite-discrete element method

(VCFEM-DEM). Ph.D. Thesis, Department of Civil Engineering, McMaster University. Available: https://macsphere.mcmaster.ca/handle/11375/18093.

Other Papers/Presentations

1. *B. Karchewski*, D. Stolle and P. Guo. (2014). Prediction of subsurface load distribution due to soil self-weight using Monte Carlo and VCFEM-DEM analysis, Presented at *Engineering Mechanics Institute Conference (EMI 2014), ASCE, Aug 5-8, Hamilton, ON.*
2. A. Pekinasova, *B. Karchewski* and P. Guo. (2014). Solution of seepage through earth embankment including location of free surface using polygonal finite elements, Presented at *Engineering Mechanics Institute Conference (EMI 2014), ASCE, Aug 5-8, Hamilton, ON.*
3. *B. Karchewski* and D. Stolle. (2010). Determination of the critical factor of safety for a circular slip surface using a genetic algorithm and rigid finite element limit equilibrium analysis, Presented at the *2nd Canadian Young Geotechnical Engineers and Geoscientists Conference, Waterton National Park, Alberta, September 16-18, 2010.*

Committees

2015	Member, 2nd Year Undergraduate Curriculum Review Committee, Department of Geoscience, University of Calgary
2015	Graduate Student Representative, Civil Engineering Graduate Student Workspace Design Committee, McMaster University
2014-2015	Graduate Student Representative, Graduate Curriculum and Policy Committee, Faculty of Engineering, McMaster University
2014-2015	Graduate Student Representative, Departmental Health and Safety Committee, Department of Civil Engineering, McMaster University
2013-2014	Graduate Student Representative, Dean of Engineering Selection Committee, Faculty of Engineering, McMaster University
2012-2013	Graduate Student Representative, Sustainability Task Force, Faculty of Engineering, McMaster University

Community Involvement

2012-2015	Attendee and Co-leader, Infinite Potential Meditation Group, Faculty of Engineering, McMaster University
2011-2015	Volunteer, Ladybird Animal Sanctuary, Hamilton, Ontario, Canada
2013	Judge, Civil Engineering Event, Engineering & Science Olympics, McMaster University
2011-2014	Student Volunteer, Department of Civil Engineering, May@Mac Event for Potential Incoming Engineering 1 Students, McMaster University