Tang-Tat (Percy) Ng
Department of Civil Engineering
University of New Mexico
Albuquerque, NM 87131
(505) 277 - 4844
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Educational Background
Ph.D. in Civil Engineering, January 1989
    Rensselaer Polytechnic Institute, Troy, NY
    Thesis: *Numerical Simulation of Granular Soil under Monotonic and Cyclic Loading: A Particulate Mechanics Approach.*
M.S. in Civil Engineering, September 1983
    Carnegie Mellon University, Pittsburgh, PA
    Thesis: *Time Series Forecasting of Ground Water Levels for Landslide Prediction.*
B.S. in Civil Engineering, June 1981
    National Taiwan University, Taiwan.

Employment History
July 2006 – present
    Professor of Civil Engineering, University of New Mexico, NM.
July 2000 – August 2005
    Senior Research Scientist, Air Force Research Laboratory, NM.
July 1996 – June 2006
    Associate Professor of Civil Engineering, University of New Mexico, NM.
August 1990 – June 1996
    Assistant Professor of Civil Engineering, University of New Mexico, NM.
January 1989 - July 1990
    Post Doctoral Research Associate, Rensselaer Polytechnic Institute, NY.
September 1984 - January 1989
    Research Assistant, Rensselaer Polytechnic Institute, NY.
March 1984 - July 1984
    Civil Engineer, United Geotechnical Engineering and Consultant Corp., Taiwan.
September 1982 - September 1983
    Research Assistant, Carnegie-Mellon University, PA.
October 1981 - July 1982
    Research Associate, National Taiwan University Industrial Research Center, Taiwan.
June 1980 - July 1981
    Laboratory Technician, Technik Engineering Corp., Taiwan.

Professional Recognition
LuoJia Chair Professor, 2012, Wuhan University, China
ASCE Fellow, 2004
Keynote lecturer, the Hong Kong Society of Theoretical and Applied Mechanics, annual meeting, 2004

Research Experience
August 2001 – present
- Analyzed the soil-structure interaction of drilled piers
- Developed the linkage between non-destructive testing in the field and laboratory observation of pavement system
- Implemented fracture model into a mesh-free program for ductile fracture
- Analyzed large deployable space structures
- Utilized Magnetic Resonance Imaging to capture the voids in sand specimens
- Applied my discrete element code to study the microscopic and macroscopic behavior of granular materials

August 1990 – July 2001
- Developed innovative materials for small satellites
- Studied the behavior of joints of rock salt
- Analyzed membrane structures numerically and experimentally
- Developed mathematical model for the fabric of granular materials
- Developed program ELLIPSE3 which uses arrays of 3-D ellipsoidal particles to simulate the behavior of granular media
- Developed program ELLIPSE3H to simulate triaxial testing of granular media
- Designed graphical user interface and relational database system for monitoring chemical inventory
- Designed an apparatus to examine the behavior of arrays of elliptical photoelastic rods
- Developed programs PENO and PENC to simulate the penetration process of a hard projectile and targets of granular medium and concrete
- Modeled fluid flow through porous media
- Analyzed the Micro-system of concrete

January 1989 - July 1990
- Developed program CONBAL
- Investigated the behavior of granular medium under monotonic and cyclic loading

September 1984 - January 1989
- Developed program CONTACT to solve the contact problem of two spheres
- Performed cyclic triaxial testing for calcareous sands and silty sands under isotropic and anisotropic confinement
- Performed dynamic analysis of dikes in Venezuela

Professional Experience
March 1984 - July 1984 (Civil Engineer, U.G.E.C. Corp.)
- Performed and analyzed geophysics exploration programs
- Designed foundations and monitoring systems
October 1981 - July 1982 (Research Associate, N.T.U.I.R.C.)
- Designed monitoring systems

RESEARCH

Publications

<u>Refereed Papers</u> (* indicates UNM students who were co-authors of the paper)

1. Ng, T.-T. and Zhou, W. (2013) "DEM Simulations of Bi-disperse Ellipsoids of Large Particle Size Ratio." CARS Mécanique, accept for publication.
2. Ng, T.-T. (2013) "Numerical Study of A Granular Material in Various Gravity Environments." Journal of Engineering Mechanics, 139(4), 489-495.
3. Ng, T.-T. (2012) "Granular Assemblages Deposited with/without Gravity." International Journal of Materials and Solids, in-Review.
4. Ng, T.-T. (2009) "Shear Strength and Fabrics of Bidisperse Ellipsoids under Different Loading Paths." Mechanics of Materials, 41(6), 748-763.
5. Ng, T.-T. (2009) "Particle Shape Effect on Macro and Micro Behaviors of Monodisperse Ellipsoids." International Journal for Numerical and Analytical Methods in Geomechanics, 33(3), 511-527.
6. Ng, T.-T. (2009) "Discrete Element Method Simulations of the Critical State of a Granular Material." Journal of Geomechanics, ASCE, 9(5), 209-216.
7. Tarefder, R. A., Kias*, E., and Ng, T.-T. (2009). "Factors Affecting Cracking of Notched Asphalt Concrete." *International Journal of Pavement Research and Technology Design*, Vol. 2, No. 4, pp 137-147.
8. Ng, T.-T. (2008) "Ultimate state of Samples of Ellipsoids under Different Stress Paths." Journal of Engineering Mechanics, ASCE, 134(9), 723-730.
9. Ng, T.-T. (2008) "Effect of Sample Size and Shape on Critical State." GeoCongress 2008: Characterization, Monitoring, and Modeling of GeoSystems, Geotechnical Special Publication No. 179, ASCE, 106-114.
10. Tarefder, R. A., Saha, N., Hall, W. J., and Ng, T.-T. (2008) "Evaluating Weak Subgrade for Pavement Design and Performance Prediction: A Case Study of US 550," Journal of GeoEngineering, 3(1), 13-24.
11. Hu*, C., Ng, T.-T., and Altobelli, S. (2006) "Void Distributions in Samples of Ottawa Sand," Geomechanics and Geoengineering, 1(3), 1-10.
12. Ng, T.-T. (2006) "Input Parameters of Discrete Element Method," Journal of Engineering Mechanics, ASCE, 132(7), 723-730.
13. Ng, T.-T. (2006) "Void Distribution of Sands Specimen by MRI," Site and Geomaterial Characterization, Geotechnical Special Publication No. 149, ASCE, 106-114.
14. Ng, T.-T. (2005) "Behavior of Gravity Deposited Granular Material under Different Stress paths," Canadian Geotechnical Journal, 42(6), 1644-1655.
15. Ng, T.-T. (2004) "Shear Strength of Assemblies of Ellipsoidal Particles." Geotechnique, 54(10), 659-669.
16. Ng, T.-T. (2004) "Macro-and Micro-Behaviors of Granular Materials under different Sample Preparation Methods and Stress Paths." International Journal of Solids and Structures, 41(21) 5871-5884.
17. Ng, T.-T. (2004) "Behaviors of Ellipsoids of Two-size," Journal of Geotechnical and

Geoenvironmental Engineering, ASCE, 130(10), 1077-1083.

18. Ng, T.-T. (2004) "PPT Fuel with Reinforcements," Earth and Space 2004, ASCE, 573-579.

19. Ng, T.-T. (2004) "Triaxial Simulations using DEM with Hydrostatic Boundaries," Journal of Engineering Mechanics, ASCE, 130(10), 1188-1194.

20. Maji, A., Montemerlo*, P. and Ng, T.-T. (2004) "Shape Correction of Inflatable Membranes by Rigidization and Actuation" AIAA Journal of Spacecraft and Rockets, 41(4), 558-563.

21. Ng, T.-T. (2002) "Hydrostatic Boundaries in Discrete Element Methods," Discrete Element Methods, Numerical Modeling of Discontinua, Geotechnical Special Publication No. 117, ASCE, 47-51

22. Ng, T.-T. (2002) "Edge Effects in Pressurized Membranes," Journal of Engineering Mechanics, ASCE, 126(10), 1100-1104.

23. Ng, T.-T. (2001) "Fabric Evolution of Ellipsoidal Arrays with Different Particle Shapes," Journal of Engineering Mechanics, ASCE, 125(10), 994-999.

24. Ng, T.-T. and Wang, Changming* (2001) "Comparison of A 3-D DEM Simulation with MRI Data," International Journal for Numerical and Analytical Methods in Geomechanics, 25(3), 497-507.

25. Ng, T.-T. (1999) "Fabric Study of Granular Materials after Compaction," Journal of Engineering Mechanics, ASCE, 125(12), 1390-1394.

26. Ng, T.-T. (1999) Discussion: Assessment of Liquefaction Potential Using Optimum Seeking Method, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, 125(12).

27. Lin, X* and Ng, T.-T. (1997) "A Three Dimensional Discrete Element Model using Arrays of Ellipsoids," *Geotechnique*, 47(2), 319-329

28. Ng, T.-T. and Petrakis, E. (1996) "Small Strain Response of A Random Array of Elastic Spheres Using the Discrete Element Method," *Journal of Engineering Mechanics, ASCE,* 122(3), 239-244.

29. Lin, X* and Ng, T.-T. (1995) "Contact Detection Algorithms for Three-Dimensional Ellipsoids in Discrete Element Method," *International Journal for Numerical and Analytical Methods in Geomechanics,* 19(9), 653-659.

30. Ng, T.-T. and Dobry, R. (1994) "Numerical Simulations of Monotonic and Cyclic Loading of Granular Soil," *Journal of Geotechnical Engineering*, *ASCE*, 120(2), 388-403.

31. Ng, T.-T. (1994) "Numerical Simulations of Granular Soil Using Elliptical Particles," *International Journal, Computers and Geotechnics*, 16(2), 153-169.

32. Ng, T.-T. and Lin, X.* (1994) "Numerical Simulations of Inherent Fabric Anisotropy of Gravitational Deposited Arrays of Elliptical Particles," *Journal Mathematical Modelling and Scientific Computing,* 4(2), 49-54.

33. Ng, T.-T. and Dobry, R. (1992) "A Nonlinear Numerical Model for Soil Mechanics," *International Journal for Numerical and Analytical Methods in Geomechanics*, 16(4), 247-264.

34. Dobry R. and Ng, T.-T. (1992) "Discrete Modeling of Stress-Strain Behavior of Media at Small and Large Strain," *Engineering Computations*, Vol. 9, 129-143.

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35. Dobry, R., Ng, T.-T., Petrakis, E., and Seridi, A. (1991) "An Incremental Elastic-Plastic Model for the Force-Displacement Relation at the Contact Between Elastic Spheres," *Journal of Engineering Mechanics*, ASCE, 117(6), 1365-1381.

36. Vasquez-Herrera, A., Dobry, R. and Ng, T.-T. (1988) "Liquefaction Failure of Anisotropically Consolidated Sand due to Cyclic Straining," *ASCE Specialty Conference on Hydraulic Fill Structures*, Fort Collins, Colorado State University, Geotechnical Special Publication 21, 346-366.

37. Dobry, R., Ladd, R.S., Reese, L.C. and Ng, T.-T. (1988) "Modelling of Pore Pressure and Shear Moduli in Calcareous Soils by Strain-controlled Cyclic Triaxial Testing," *Proceedings, International Conference on Calcareous Sediments,* Perth, Vol. 2, Jewell and Khorshid, Editors, 531-539.

Invited Conference Papers

1. Ng, T.-T. (2012) "DEM Simulations of Bidisperse Ellipsoids of Large Particle Size Ratio," (CD-Rom) 23th EM 2012, June 17-20, Notre Dame, IN.

2. Ng, T.-T. and Yousefi*, S. (2011) "Mechanics of Bi-disperse granular materials," (CD-Rom) 22th EM 2011, June 2-4, Boston, MA.

3. Ng, T.-T. (2010) "Midscale Behavior of Unbonded Particles under Different Gravity Conditions," Proceedings, US-China Workshop on Energy and Environment in the Development of Sustainable Asphalt Pavements, June 6-8, Xian, China.

4. Ng, T.-T. (2010) "Gravitational Effect on Material Response of Granular Materials," (CD-Rom) March 14-17, Earth and Space 2010, Honolulu, HI.

5. Ng, T.-T. (2008) "Shape Effect of Assemblages of Monodisperse Oblate Ellipsoids," (CD-Rom) 19th EM08, May 18-21, Minneapolis, Minnesota.

6. Ng, T.-T. (2007) "Shear Strength, Intermediate Principal Stresses, and Density of Assemblages of Ellipsoids," (CD-Rom) 18th Engineering Mechanics Conference, June 4-6, Blacksburg, Virginia.

7. Ng, T.-T. (2007) "Ultimate State of A Granular Material," Proc., International Workshop on Constitutive model of Geomaterials. Jan 12-13, Hong Kong, 188-193.

8. Ng, T.-T. (2006), "Numerical simulation of a deployable structure," (CD-Rom) Earth and Space 2006, Huston, TX.

9. Ng, T.-T. (2005) "Behavior of a Deployable Structure with Composite Tape-Springs," 15th International Conference Composite Materials, Jun 27-Jul 1, Durban, South Africa.

10. Ng, T.-T. (2005) "Effect of Intermediate Principal Stress and Principal Direction on an Assembly of Ellipsoids," (CD-Rom) McMat 2005, Jun 1-3, Baton Rouge, LA.

11. Ng, T.-T. and Murphey, T. (2005) "A Novel Deployable Boom with Flexible Hinges," AIAA paper 2005-2197, 46th Structures, Structural Dynamics & Materials Conference, Apr. 18-21, Austin, TX.

12. Lips*, J., Maji, A. and Ng, T.-T. (2005) "Deployable Rate Prediction of Elastic

Memory Composites," AIAA paper 2005-2198, 46th Structures, Structural Dynamics & Materials Conference, Apr. 18-21, Austin, TX.

13. Ng, T.-T. (2004) "The Effect of Damping in Discrete Element Simulations," (CD-Rom) 17th ASCE Engineering Mechanics Conference, June 13-16, Newark, DE.

14. Hu, C.*, Ng, T.-T. and Altobelli, S. (2004) "Void Distributions in Samples of Ottawa Sands," (CD-Rom) 17th ASCE Engineering Mechanics Conference, June 13-16, 2004, Newark, DE.

15. Lips*, J., Ng, T.-T., and Maji, A. (2004) "Impact of Thermal Cycles on Deployment Accuracy of Elastic Memory Composites," Earth and Space 2004, March 7-10, Houston, TX, 938-945.

16. Ng, T.-T. (2003) "Effect of Intermediate Principal Stress on the Behavior of a Two-size Ellipsoidal Specimen," Proc., QuaDPM'03 Workshop, Aug. 26-28, Budapest, Hungary, 189-194.

17. Ng, T.-T. (2003) "DEM Simulations with Two-size Ellipsoidal Specimens," (CD-Rom) 16th ASCE Engineering Mechanics Conference, July 16-18, Seattle, WA.

18. Ng, T.-T., Aube*, D., and Altobelli, S. (2002) "Void Distributions of Sand Specimens by MRI," (CD-Rom) 15th ASCE Engineering Mechanics Conference, June 2-5, New York, NY.

19. Ng, T.-T. and Buckman* J. (2002) "Effects of Fibers on The Strength of Teflon Fuel," AIAA paper 2002-442, 43rd Structures, Structural Mechanics, Dynamics Conference, April 21-25, Denver, CO.

20. Maji, A. Ng, T.-T. and Montemerlo*, P. (2002) "Rigidization of a Deployable Membrane Reflector," AIAA paper 2002-1458, 43rd Structures, Structural Mechanics, Dynamics Conference, April 21-25, Denver, CO.

21. Ng, T.-T. (2002) "Edge Effects in Pressurized Membranes," Proceedings, Space 2002 and Robotics 2002, March, Albuquerque, NM, 40-46.

22. Ng, T.-T. (2001) "Fabric of Ellipsoidal Assemblies," (CD-Rom) ASME/ASCE/SES 2001 Mechanics and Materials Conference, June 27-29, San Diego, CA.

23. Fosness, E., Wegner, P., Buckley, S. and Ng, T.-T. (2001) "Composite Materials Research and Applications for Space Structures," (CD-Rom) ASME/ASCE/SES 2001 Mechanics and Materials Conference, June 27-29, San Diego, CA.

24. Ng, T.-T. (2000) "Fabric Study of an Ellipsoidal Array at Large Strain," (CD-Rom) 14th Engineering Mechanics Conference, May 21-24, Austin, TX.

25. Ng, T.-T. (1999) "Compaction Process of Granular Particles," (CD-Rom) 13th Engineering Mechanics Conference, June13-16, Baltimore, MD.

26. Ng, T.-T. and Wang*, C. (1999) "Numerical Study of Arrays of Ellipsoids," (CD-Rom) 13th Engineering Mechanics Conference, June13-16, Baltimore, MD.

27. Ng, T.-T., Wang*, C. and Altobelli, S. (1997) "3-D MRI Experiment of Granular Material," Mechanics of Deformation and Flow of Particulate Materials, June 29-July 2, Evanston, IL, 189-198.

28. Ng, T.-T., Kelly, M.*, and Sampson, J.* (1996) "MRI Results of Direct Shear Tests on Round Particles," *Proceedings, ASCE Engineering Mechanics Conference*, May 19-22, Fort Lauderdale, FL., Vol. 1, 572-575.

29. Ng, T.-T. and Fang, H.E. (1995) "Study of Cyclic Behavior of Granular Soil using Arrays of Ellipsoids," *Proceedings, ASME 1995 Summer Annual Meeting*, June 28-30, Los Angeles, CA, 59-70.

30. Lin, X* and Ng, T.-T. (1995) "Numerical Simulation of Fabric Anisotropy of Gravitationally Deposited Soils using Random Arrays of Ellipsoidal Particles," *Proc., ASME 1995 Summer Annual Meeting*, June 28-30, Los Angeles, CA, 83-90.

31. Ng, T.-T. and Kong, J.* (1995) "Experimental Study of Micro-Element for Concrete," *Proceedings, 10th ASCE Engineering Mechanics Conference*, May 21-24, Vol. 1, Boulder, CO, 489-492.

32. Lin, X*. and Ng, T.-T. (1994) "Numerical Modeling of Granular Soil Using Random Arrays of Three-Dimensional Elastic Ellipsoids," *Proceedings, 8th International Conference on Computer Methods and Advances in Geomechanics*, May 22-28, Vol. 1, Morgantown, VA, 605-610.

33. Ng, T.-T. (1993) "Numerical Simulations for Penetration Process of Concrete Target Using the Discrete Element Method," in Advances in Numerical Simulation Techniques for Penetration and Perforation of Solids, *Proceedings, 1993 ASME Annual Winter Meeting*, New Orleans, LA, Nov. 28-Dec. 3, AMD-Vol. 171, 17-24.

34. Ng, T.-T. and Lin, X.* (1993) "Numerical Simulations of Inherent Fabric Anisotropy of Gravitational Deposited Arrays of Elliptical Particles," *Proceedings, 9th International Conference on Mathematical and Computer Modelling*, July 26-29, Berkeley, CA. 6 pp.

35. Ng, T.-T. (1992) "Numerical Simulations of Particulate Particles Using Discrete Element Method," *Proceedings, 23rd Annual Meeting of the Fine Particle Society*, Las Vegas, NV, July 14-17, 2 pp.

36. Dobry, R. and Ng, T.-T. (1992) "Numerical and Experimental Study of Granular Media Using Random Arrays of Ellipsoids," *Proceedings, Structures, Geomechanics and Building Systems Programs Grantee Conference*, sponsored by NSF, San Juan, Puerto Rico, June 10-12, 2 pp.

37. Ng, T.-T. (1992) "Numerical Simulations of Granular Soils Using Elliptical Particles," in Microstructural Characterization in Constitutive Modeling of Metals and Granular Media, *Proceedings, 1992 ASME Applied Mechanics and Materials Conference*, Tempe, AR, April 28-May 1, MD-Vol. 32, 95-117.

38. Ng, T.-T. and Dobry, R. (1991) "Numerical Undrained Cyclic Simulations Using the Discrete Element Method," *Proc., ASCE Engineering Mechanics Specialty Conference,* Columbus, OH, May 18-22, Vol. 2, 1234-1238.

39. Ng, T.-T. (1991) "Research Activities in the University of New Mexico," *Proc., The Joint Meeting and Workshop of The United States Universities Council on Geotechnical Engineering Research and Association of Engineering Firms Practicing in the Geosciences*, sponsored by NSF, Arlington, TX, March 25-27, 137-139.

40. Dobry, R., Ng, T.-T. and Petrakis, E. (1989) "Deformational Characteristics of Granular Soils in the Light of Particulate Mechanics," *Proc., XIV Geotechnical Conference*, Torino, Italy, November 28-30, 33 pp.

Conference Papers
1. Ng, T.-T. (2003) "Reinforced Tefzel with Short Kevlar Fibers," TP03PUB372, ICCM-14, July 14-18, San Diego, CA.
2. Ng, T.-T. and Lin, X.* (1993) "Numerical Simulations of Granular Soils using Elliptical Particles" *Proc., 2nd U.S. Conference on Discrete Element Methods*, Massachusetts Institute of Technology, Boston, March 17-19, 11 pp.
3. Ng, T.-T. (1991) "Modeling Discontinua with the Discrete Element Method," *Proc., 28th Paving and Transportation Conference,* Albuquerque, NM, January 8-11, 41-56.
4. Dobry, R. and Ng, T.-T. (1989) "Discrete Modeling of Stress-Strain Behavior of Granular Media at Small and Large Strain," *Proc., 1st U.S. Conf. on Discrete Element Methods*, Colorado School of Mines, Golden, Colorado, October 19-20, 13 pp.
5. Petrakis, E., Dobry, R. and Ng, T.-T. (1989) "Small Strain Response of Random Arrays of Elastic Spheres Using a Nonlinear Distinct Element Procedure," *Proc., International Symposium on Wave Propagation in Granular Media, Annual Winter Meeting of ASME*, San Francisco, CA, December, AMD Vol. 101, 17-27.
6. Gazetas, G. and Ng, T.-T. (1985) "Simplified Model for Impedances of Footings on Layered Deposits," *Proc., Second International Conference on Soil Dynamics and Earthquake Engineering*, 4, Springer Verlag, Editors, 37-50.
7. Ng, T.-T. (1984) "Time Series Forecasting of Ground Water Levels for Landslide Prediction," (in Chinese) *Proc., Second Hydraulic Engineering Conference*, Taipei, R.O.C., 405-419.

Reports
1. Ng, T.-T. and Faiza, S. (2012) "Development and Validation of a Unified Equation for Drilled Shaft Foundation Design in New Mexico," Final Report to New Mexico Department of Transportation, 83 pp.
2. Ng, T.-T. (2006) "Mobilized Mechanism of Side Resistance of Drilled Shafts using Finite Element Analysis," Final Report to New Mexico Department of Transportation, 45 pp.
3. Ng, T.-T. and Hu, C*. (2002) "Distribution of Voids of Ottawa Sand Specimens using MRI," *Final Report to Research Allocations Committee*, University of New Mexico, Albuquerque, NM, 4 pp.
4. Ng, T.-T. and Wang, C*. (1999) "Fabric of Granular Material Studied by DEM and MRI," *Final Report to National Science Foundation*, University of New Mexico, Albuquerque, NM, 8 pp.
5. Ng, T.-T. and Losack, N* (1998) "Simple Shear Tests on Ottawa Sands," *Report to National Science Foundation*, University of New Mexico, Albuquerque, NM, 6 pp.
6. Ng, T.-T. and Padilla, Y* (1997) "Experimental Study of Contact Behavior of Pharmaceutical Pills," *Report to National Science Foundation*, University of New Mexico, Albuquerque, NM, 6 pp.
7. Ng, T.-T. and Kong, J* (1995) "Experimental Study of Micro-Element for

Concrete," *Final Report to Research Allocations Committee*, University of New Mexico, Albuquerque, NM, 6 pp.

8. Ng, T.-T. and Lin, X.* (1994) "ELLIPSE3-Simulated Granular Material using Quartz Ellipsoids with the Discrete Element Method," *Final Report to National Science Foundation*, University of New Mexico, Albuquerque, NM, 42 pp.

9. Ng, T.-T. and Kota, S.* (1993) "Interpretation of The Radially Converging Tracer Tests at The Finnsjon Research site, Sweden," *Final Report to Sandia National Laboratories*, University of New Mexico, Albuquerque, NM, 140 pp.

10. Petrakis, E., Dobry, R., Liu, L. and Ng, T.-T. (1992) "A Numerical Investigation of the Behavior of Granular Media using Nonlinear Discrete Element Method," *Final Report to United States Air Force Office of Scientific Research,* Rensselaer Polytechnic Institute, Troy, NY, 41 pp.

11. Ng, T.-T. and Dobry, R. (1991) "CONBAL-Simulated Granular Material using Quartz Spheres with the Discrete Element Method," *Final Report to National Science Foundation*, Rensselaer Polytechnic Institute, Troy, NY, 65 pp.

12. Dakoulas, P., Dobry, R., Vasquez-Herrera, A., Ng, T.-T. and Gazetas, G. (1991) "Evaluation of Seismic Liquefaction Flow Failure of Three Coastal Dyke Sections," *Phase II Report, INTEVEP*, Rensselaer Polytechnic Institute, Troy, NY, 215 pp.

13. Petrakis, E. and Dobry, R. and Ng, T.-T. (1988) "Small Strain Response of Random Array of Elastic Spheres Using a Nonlinear Distinct Element Procedure," *Report CE-88-02*, Rensselaer Polytechnic Institute, Troy, New York, 59 pp.

14. Dobry, R., Ladd, R.S., Reese, L.C. and Ng, T.-T. (1986) "North Rankin "A" Project: Pore Pressure Generation in Foundation Soil due to Cyclic Loading Laboratory Results, Interpretation and Modelling," *Report to Woodside Offshore Petroleum Pty. Ltd*, Rensselaer Polytechnic Institute, Troy, New York, 93 pp.

Research Support

1. "Determining Effectiveness of Non-Destructive Testing Methods to Characterize Unknown Bridge Foundations," July 2013-June 2016, <u>New Mexico Department of Transportation</u>, $369k

2. "Development and Validation of a Unified Equation for Drilled Shaft Foundation Design in New Mexico," June 2010-June 2012, <u>New Mexico Department of Transportation</u>, $175k

3. "Analysis of Deployable Structures," August 2009-February 2014, <u>Air Force Research Laboratory</u>, $30k

4. "Future Design of Perpetual Pavements for New Mexico," June 2008-October 2009, <u>New Mexico Department of Transportation</u>, with Rafiqul Tarefder and John Stormont, $110k.

5. "High Energy Analysis of Structures," June 2005 – December 2006, <u>Ball Aerospace Inc.</u>, $46k.

6. "Thermal Analysis of Composite Structures," March 2005 – March 2006, <u>Ball

Aerospace Inc., $40k.

7. "Verification of the Unified Design Equation for Drilled Shafts," November 2002 – November 2006, <u>New Mexico Department of Transportation</u>, $80k.

8. "Adjustment Procedures for Back calculated Pavement Layer Moduli," March 2005-December 2005, <u>New Mexico Department of Transportation</u>, $15k.

9. "Ultra-Lightweight Deployable Structures," August 2004 – August 2005, Intergovernmental Personnel Act, <u>Air Force Research Laboratory</u>, $97k.

10. "Large Deployable Space Structures" August 2003 – August 2004, Intergovernmental Personnel Act, <u>Air Force Research Laboratory</u>, $86k.

11. "Meshless Continuum Analysis," May 2003 – January 2005, <u>Ball Aerospace Inc.</u>, $68k.

12. "Adjustment Procedures for Back calculated Pavement Layer Moduli," March 2003-December 2004, <u>New Mexico Department of Transportation</u>, $30k.

13. "Self-consuming Satellites" July 2002 – July 2003, Intergovernmental Personnel Act, <u>Air Force Research Laboratory</u>, $82k.

14. "Self Consuming Satellite," January 2002 – February 2003, <u>New Mexico Space Grant Consortium</u>, $10k.

15. "Development of Magnetostrictive Composites" July 2001 – July 2002, Intergovernmental Personnel Act, <u>Air Force Research Laboratory</u>, $82k.

16. "Finite Element Analysis of Membrane Structures" July 2000 – July 2001, Intergovernmental Personnel Act, <u>Air Force Research Laboratory</u>, $76k.

17. "Soil Structure Interaction," December 2000 – September 2002, <u>Sandia National Laboratories</u>, $34k.

18. "Distribution of Voids of Ottawa Sand Specimens using MRI," January 2000 – September 2000, <u>University of New Mexico</u>, $3k.

19. "Computer Design for Chemical Information System," October 1997 – September 2000, <u>Sandia National Laboratories</u>, $81k.

20. Lovelace Fellowship, February 1996 – July 1997, <u>Lovelace Biomedical Environmental Research Inst</u>, $24k.

21. "Computer Design for Chemical Information System," November 1995 – September 1998, <u>Sandia National Laboratories</u>, $80k.

22. "Fabric of Granular Material Studied by DEM and MRI," with 3 supplements, June 1995-May 1999, <u>National Science Foundation</u>, $135k.

23. "Database Design and Implementation for Chemical Information System," June 1995-September 1997, <u>Sandia National Laboratories</u>, $70k.

24. "Experimental Study of Granular Medium using Direct Shear Device and MRI," June 1995-May 1996, <u>Minority Engineering, Mathematics and Science Program</u>, University of New Mexico, $4k.

25. "Development of GUI and Database System for Chemical Inventory," December 1994-September 1995, <u>Sandia National Laboratories</u>, $30k.

26. "Development of a Tool for Foundation Design," August 1994-December 1994, <u>Teaching Allocation Subcommittee</u>, University of New Mexico, $2k.

27. "Development of GUI and Database System for Chemical Inventory," May 1994-September 1994, <u>Sandia National Laboratories</u>, $30k.

28. "Numerical Study of Stress-Strain Behavior of Granular Materials Using 3-D

Random Arrays of Elastic Ellipsoids," (30 Hours of Cray CPU), July 1993-December 1993, <u>San Diego Supercomputer Center</u>.

29. " Experimental Study of Micro-Element for Concrete," May 1993 – September 1993**,** <u>Research Allocation Committee</u>, University of New Mexico, $6k.

30. "Numerical Simulation for Penetration Process of A Semi-infinite Concrete Target Using the Discrete Element Method," October 1992 – September 1993, <u>Sandia National Laboratories</u>, $30k.

31. "Interpretation of Tracer Tests Conducted in the Finnsjon Test Site," August 1992 – November 1993, <u>Sandia National Laboratories</u>, $20k.

32. "Numerical Simulation for Penetration Process into Granular Media Using the Discrete Element Method," October 1991 – September 1992, <u>Sandia National Laboratories</u>, $30k.

33. "Numerical and Experimental Study of Stress-Strain Behavior of Granular Soil Using Random Arrays of Elastic Ellipsoids," July 1991 – May 1993, <u>National Science Foundation</u>, $86k.

34. "An Ellipse Base Micromechanics Model for Angular Sands," March 1991 - September 1991, <u>Research Allocation Committee,</u> University of New Mexico, $2k.

35. "Using The Discrete Element Method to Study The Behavior of Porous Media," (39 Hours of Cray CPU), January 1991 – December 1992, <u>Cray Research Inc.</u>

Students Supported on Funded Research Projects

D. Aube	Ph.D.	January 2002 – January 2003
X. Chen	Ph.D.	February 1996 – May 1996
S. Faiza	Ph.D.	August 2010 – December 2012
C. Hu	Ph.D.	August 2001 – May 2006
K. Kline	Ph.D.	May 2003 – July 2004
X. Lin	Ph.D.	January 1992 – June 1994
C. Wang	Ph.D.	August 1995 – August 1999
S. Yousefi	Ph.D.	August 2010 – December 2012
D. Aube	M.S.	May 2000 – December 2001
J. Buckman	M.S.	August 2001 – December 2002
J. Casperson	M.S.	May 1994 – September 1994
Y. Guo	M.S.	November 1995 – May 1996
T. Hassen	M.S.	February 1995 – January 1997
G. Heo	M.S.	August 1991 – May 1992
S. Hyderabad	M.S.	August 2005 – Fall 2007
M. Jambholkar	M.S.	August 2003 – May 2004
D. Luke	M.S.	August 2004 – Spring 2007
J. Kong	M.S.	January 1993 – May 1995
S. Kota	M.S.	August 1991 – June 1993
M. Mindi	M.S.	September 2009 – June 2010
L. Pena-Draper	M.S.	November 1994 – January 1995
P. Valavala	M.S.	January 2003 – December 2004
L. Akkaraju	B.S.	August 1991 – February 1992
N. Losack	B.S.	May 1999 – August 1999
Y. Padilla	B.S.	May 1997 – August 1997
M. Kelley	B.S.	May 1995 – June 1996
D. Romero	B.S.	May 1994 – September 1994
R. Rubio	B.S.	December 1994 – May 1995
J. Saavedra	B.S.	May 1995 – August 1996
J. Sampson	B.S.	May 1995 – August 1995
J. Yoong	B.S.	June 2002 – May 2004

L. Akkaraju won the 1st prize in the College of Engineering student paper contest
D. Luke received the prestigious O'Neill Scholarship from the International Association of Foundation Drilling

SERVICE

Professional Affiliations and National Professional Committee Memberships
- American Society of Civil Engineers
  Aerospace Division,
    Dynamics and Controls Committee, Chair (2004-2006)
    SDM Conference Liaison Committee, Secretary (2005-2007)
  Engineering Mechanics Division,
    Properties of Materials, member (1999-present)
    Granular Materials Committee, Chair (2009-present)
  Geotechnical Engineering Division,
    Soil Dynamics Committee, member (1995-2006)
- American Society of Mechanical Engineers
  Applied Mechanics Division,
    Geomechanics Committee, Secretary (2005-2011)
- Associate Editor of the Journal of Engineering Mechanics, ASCE (2009-2012)
- Member of the Editorial board of the International Journal of Mechanics and Solids (2005-present)
- Member of the Editorial board of the Journal of Geoengineering (2005-present)
- Member of the Editorial board of the ISRN Civil Engineering (2012-present)
- Treasurer, member of the National council of the Chinese Institute of Engineers-USA (2000-2002)
- Vice President, New Mexico Chapter of The Chinese Institute of Engineers, USA (1998-2000)
- President, New Mexico Chapter of The Chinese Institute of Engineers, USA (2000-2001)
- Advisor, New Mexico Chapter of The Chinese Institute of Engineers, USA (2001-present)
- Registered Professional Engineer in New Mexico.

Professional Service

1. Organized and chaired sessions for the annual Engineering Mechanics Conference, 2000-present.
2. Organized and chaired sessions for the Annual Paving and Transportation Conference, Albuquerque, NM, 1991-present.
3. Organized and chaired sessions for the biennial Earth and Space Conference, 2002-2006.
4. Organized and chaired sessions at the 3rd International Conference on Discrete Element Methods, Sep. 23-25, 2002, Santa Fe, NM.
5. NSF Review Panel: 1998, 1999, 2009, 2010, 2011
6. NSF Proposal Reviewer, 2000, 2001, 2004, 2005, 2006, 2007, 2008
7. Air Force Office of Science and Research Proposal Reviewer, 2000-2005

8. Missile Defense Agency Proposal Reviewer, 2000-2005
9. Panelist: *Workshop on Experimental Needs for Geotechnical Earthquake Engineering*, Albuquerque, NM. 1991 (sponsored by NSF).
10. Invited Lectures: the Hong Kong Society of Theoretical and Applied Mechanics, University of California at San Diego, the South China University of Technology, PRC, the Tongi University, PRC, the National Chiao Tung University, Taiwan, the National Ocean University, Taiwan, the National Taiwan University of Science and Technology, Taiwan, the Tamkang University, Taiwan, the Hong Kong University of Science and Technology, Hong Kong, and the University of Macau, Macau.
11. Member: Paper Review Committee for the 2nd and 3rd International Conference on Discrete Element Methods.
12. Paper Reviewer for 14 journals: ASCE: Journal of Computing in Civil Engineering, Journal of Engineering Mechanics, Journal of Geotechnical and Geoenvironmental Engineering, Journal of Environmental Engineering, Acta Mechanica, Computers and Geotechnics, Engineering Computations, International Journal of Geomechanics, International Journal of Geotechnical and Geological Engineering, Journal of Mechanics and Structures, Mechanics and Materials, Nuclear Engineering and Design, Journal of Zhejiang University-SCIENCE A, and International Journal for Numerical and Analytical Methods in Geomechanics.

Other Service

1. UNM, Library Committee (2008 – present)
2. UNM, Computer Use Committee (2002 – present)
3. UNM Faculty & Staff Benefits Committee (1991 - 1993)
4. UNM, School of Engineering, Computer Committee (1990 –1996)
5. UNM, Department Equipment Committee, Chair (1994 - present)
6. UNM, Department Curriculum Committee (2002 – 2004)
7. UNM, Department Graduate Committee (2005 – 2007)
8. APS mathematics textbooks and teaching tools review Committee (1999)
9. Paving and Transportation Conference Program Organizing Committee (1990 - present)
10. Technical Coach of the Manzano High School Team, New Mexico High School Supercomputing Challenge (1991 - 1992)
11. Judge of the 1994 Regional Science and Engineering Fair
12. Faculty Advisor, the Chinese School of Language and Art (1991 - present)
13. Undergrad Student Advisor
14. Faculty Advisor, ASCE UNM student Chapter