

MEHMET ALİ GÜLER

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EDUCATION

LEHIGH UNIVERSITY **Bethlehem, PA, USA**
Ph.D., Mechanical Engineering, **2001**
Emphasis on contact mechanics of ceramics, applied mathematics and numerical methods
Dissertation: “Contact Mechanics of Functionally Graded Coatings (FGMs)”
Advisor: Prof. F. Erdogan

LEHIGH UNIVERSITY **Bethlehem, PA, USA**
M.S., Mechanical Engineering, **1996**
Emphasis on punch problems for graded materials, numerical methods.
Thesis: “The problem of a rigid punch with friction on a graded elastic medium”
Advisor: Prof. F. Erdogan

UNIVERSITY OF SUSSEX **Brighton, UK**
M.S., Computer Technology in Manufacturing **1991**
Emphasis on control systems, simulation, computer aided design and manufacturing
Thesis: “Self organizing control of hardboard manufacturing and coupled tank systems”
Advisor: Prof. A. W. Self

MIDDLE EAST TECHNICAL UNIVERSITY (METU) **Turkey**
B.S., Mechanical Engineering **1990**
Thesis: “Computer aided selection of DC servomotors”
Advisor: Prof. I. H. Filiz

EXPERIENCE

TOBB UNIVERSITY OF ECONOMICS AND TECHNOLOGY **Ankara, TURKEY**
Associate Professor **2010-present**
Assistant Professor **2006-2010**

- Taught courses from sophomore level to graduate level, which covered the areas of statics, dynamics, machine design, finite element method for mechanical engineers and theory of elasticity.
- Conducted research in the areas of mechanics of thin films on graded coatings, explicit dynamic analysis, crashworthiness, simulation of forming and springback and rotary bending of tubes

GE Marmara Technology Center (GE MTC) **Gebze, TURKEY**
Consultant **2010**

- Helped GE MTC Engineers in doing FEA analysis of Aircraft Engine components using ANSYS

VIRGINIA COMMONWEALTH UNIVERSITY **Richmond, VA, USA**
Visiting Assistant Professor **2007**

- Conducted research in springback prediction of Advanced High Strength Steels used in automobile components.

TEMSA GLOBAL **Adana, TURKEY**
Senior Structural Engineer **2005-2006**

- Managed all phases of bus rollover simulation projects (ECE R66), including building the FEA models in ANSA, preparation of mass lists, verification of all necessary analysis data (e.g. center of gravity and mass moment of inertias of rigid components, engine, axles, fuel pump, AC etc), analysis setup in LS-DYNA, running, verification, and certification.
- Performed 3D stress analysis of automotive parts under structural and dynamic loads using ANSYS and determined the critical locations and suggested design changes to obtain maximum life of components.
- Carried out modal analysis of various type of busses and created animations to illustrate several modes of excitation.

MEHMET A. GULER, P. 2

CD-ADAPCO (Analysis Design and Application Company)

Melville, NY, USA

Senior Structural Engineer

2000-2005

- Reviewed contracts with customer to determine analysis requirements and goals and best methods to achieve them.
- Identified possible causes of failure of a glass lining in a reactor.
- Conducted single cylinder thermal analysis of a six-cylinder diesel engine to understand the thermal behavior of the cylinder and the head.
- Performed 3D stress analysis of rotating parts in the gas turbines and compressors under thermal, structural and dynamic loads using ANSYS.
- Carried out modal analysis of a generator and created a movie to illustrate several modes of excitation.
- Performed thermal and structural analysis of EGR coolers used in truck engines, identified the regions susceptible to cracking and recommended design changes to obtain maximum life of the components.
- Models included thermal and structural loading, intermittent contact, friction and non-linear material properties.
- Generated finite element meshes using PROSTAR based upon geometry defined by CAD data and/or engineering drawings.
- Designed mesh features based upon anticipated stress levels and priori knowledge of critical areas.
- Created numerous programs and scripts to automate model generation, analysis set-up, and verification.

LEHIGH UNIVERSITY

Bethlehem, PA, USA

Research Assistant

1994-2000

- Research focused on stress analysis and fracture characterization of ceramic coatings on metal substrates, involving both mechanical and thermal stresses. Additionally, analyzed the influence of parameters affecting failure.
- Developed analytical models to study the contact mechanics of Functionally Gradient Materials (FGMs). Applied these models to problems ranging from thermal barrier coatings to biological systems like bones.
- Calculated the stresses affecting the wear performance of contacting bodies.

LEHIGH UNIVERSITY

Bethlehem, PA, USA

Teaching Assistant

1997-1999

- Assisted Engineering Mechanics and Statics courses.

HONORS & AWARDS

- Scholarship for graduate studies abroad, Turkish Higher Education Council, 1993-1999.

PROFESSIONAL ACTIVITIES

- Reviewed for The Arabian Journal for Science and Engineering, Surface & Coatings Technology, European Journal of Mechanics - A/Solids, Mechanics Research Communications, Journal of Material Processing and Technology, Acta Mechanica, International Journal of Fatigue, International Journal of Solids and Structures, Mechanics of Materials, Meccanica.
- Organized with other colleagues “5th International Powder Metallurgy Conference”, TOBB ETU, Ankara, Turkey, 10/2008.
- Chaired sessions and presented papers in the “9th US National Congress on Computational Mechanics”, July 2007, San Fransisco, California, USA.

PUBLICATIONS

- S. Dag, T. Apatay, **M.A. Guler**, M. Gulgeç, (2011), “A surface crack in a graded coating subjected to sliding frictional contact”, accepted for publication in Engineering Fracture Mechanics.
- **M.A. Guler**, A.O. Atahan and B. Bayram, (2011), “Crashworthiness evaluation of an intercity coach”, International Journal Heavy Vehicle Systems, 18 (1), pp. 64 - 82.
- E. Acar, **M.A. Guler**, B. Gerçeker, M.E. Cerit, B. Bayram, (2011) "Multi-objective crashworthiness optimization of tapered thin-walled tubes with axisymmetric indentations," Thin-Walled Structures, 49, pp. 94-105.
- T. Apatay, S. Dag, **M.A. Guler**, M. Gulgeç, (2010), “Subsurface contact stresses in a functionally graded coating loaded by a frictional flat stamp”, Journal of the Faculty of Engineering and Architecture of Gazi University, 25 (3), pp. 611-624.
- **M.A. Guler**, F. Ozer, M. Yenice, M. Kaya, (2010), “Springback Prediction of Dp600 Steels For Various Material Models” Steel Research International, Special Edition Metal Forming 2010.
- **M.A. Guler**, M.E. Cerit, B. Bayram, B. Gerçeker and E. Karakaya, (2010), “Comparison of energy absorption capacity of various crashbox designs for frontal crash”, International Journal of Crashworthiness, 15 (4), pp. 377 - 390. → cited 1 time (Source Web of Science).
- S. Dag, **M.A. Guler**, B. Yildirim, A.C. Ozatag, (2009), “Sliding frictional contact between a rigid punch and a laterally graded elastic medium”, International Journal of Solids and Structures, Vol. 46 (22-23), pp. 4038-4053.
- **M.A. Guler**, (2008), “Mechanical modeling of thin films and cover plates bonded to graded substrates”, Journal of Applied Mechanics - Transactions of the ASME, Special Issue Honoring Professor Fazil Erdogan's Contributions to Mixed Boundary Value Problems of Inhomogeneous and Functionally Graded Materials, edited by M.-J. Pindera and G.H. Paulino, Vol. 75 (5), Article Number: 051105. → cited 2 times (Source Web of Science).
- **M.A. Guler**, K. Elitok, B. Bayram and U. Stelzmann, (2007), “The influence of seat structure and passenger weight on the rollover crashworthiness of an intercity coach”, International Journal of Crashworthiness, Vol. 12 (6), pp. 567 – 580. → cited 5 times (Source Web of Science).
- **M.A. Guler** and F. Erdogan, (2007), “The frictional sliding contact problems of rigid parabolic and cylindrical stamps on graded coatings”, International Journal of Mechanical Sciences, Vol. 49 (2), pp. 161-182. → cited 15 times (Source Web of Science).
- **M.A. Guler** and F. Erdogan, (2006), “Contact mechanics of two deformable elastic solids with graded coatings”, Mechanics of Materials, Vol. 38 (7), pp. 633-647. → cited 25 times (Source Web of Science).
- **M.A. Guler** and F. Erdogan, (2004), “Contact mechanics of graded coatings”, International Journal of Solids and Structures, Vol. 41 (14), pp. 3865-3889. → cited 46 times (Source Web of Science).

INTERNATIONAL CONFERENCE PUBLICATIONS

- **M.A. Guler**, Y.F. Gulver and S. Dag, (2010), “Mechanical modeling of thin films bonded to functionally graded materials”, Proceedings of the 10th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials, Sendai, Japan, 2008, Materials Science Forum, 631-632, pp. 333-338.
- **M.A. Guler**, L. Sözen, R. M. Görgülüarslan, E. M. Kaplan, (2010), “Prediction of Springback in CNC Tube Bending Process Based on Forming Parameters, 11th International LS_DYNA Users Conference, Detroit, Michigan.
- M. E. Cerit, **M.A. Guler**, B. Bayram, U. Yolum, (2010), “Improvement of the Energy Absorption Capacity of an Intercity Coach for Frontal Crash Accidents, 11th International LS_DYNA Users Conference, Detroit, Michigan.
- **M.A. Guler**, A.O. Atahan and B. Bayram, (2009), “Effectiveness of using seat belt on the rollover crashworthiness of an intercity coach”, 21th International Technical Conference on the Enhanced Safety of Vehicles, ESV, Stuttgart, Germany.
- **M.A. Guler**, Y.F. Gülver and S. Dag, (2008), “Mechanical modeling of thin films bonded to functionally graded materials”, in Proceedings of the 5th International Powder Metallurgy Conference, Ankara, Turkey, pp. 369-378 (in Turkish).
- **M.A. Guler**, F. Erdogan and S. Dag, (2008), “Contact problems with friction in graded materials”, in Proceedings of the Multiscale and Functionally Graded Materials Conference 2006, Honolulu, Hawaii, USA. Editors G. H. Paulino, M.-J. Pindera, R. H. Dodds, Jr., F. A. Rochinha, E. V. Dave, and L. Chen, American Institute of Physics, Vol. 978, pp. 784 - 789.

- **M.A. Guler**, F. Erdogan and S. Dag, (2008), “Modeling of thin films and cover plates bonded to graded substrates”, in Proceedings of the Multiscale and Functionally Graded Materials Conference 2006, Honolulu, Hawaii, USA. Editors G. H. Paulino, M.-J. Pindera, R. H. Dodds, Jr., F. A. Rochinha, E. V. Dave, and L. Chen, American Institute of Physics, Vol. 978, pp. 790 - 795.
- K. Elitok, **M.A. Güler**, B. Bayram, B. and U. Stelzmann, (2006), “An Investigation on the Rollover Crashworthiness of an Intercity Coach, Influence of Seat Structure and Passenger Weight”, in 9th International LS-Dyna Users Conference, Detroit, USA, pp. 11-17 – 11-34.
- **M.A. Guler** and F. Erdogan, (1998), “Contact Mechanics of FGM coatings”, in the 8th Japan-US Conference on Composite Materials, Baltimore, Maryland, USA, September, 1998. The 8th Japan-US Conference on Composite Materials, Baltimore, Maryland, USA.

NATIONAL CONFERENCE PUBLICATIONS

- M.A. Guler, L. Sözen, R.M. Görgülüarslan, E.M. Kaplan, (2010), “Investigation On Deformation Characteristics Of Rotary Draw Tube Bending And Roll Bending Operations”, 5th Automotive Technologies Congress, Bursa, Turkey.
- M.A. Guler, N. Babacan, U. Yolum, Y. Demiryürek, (2010), “CONWEP Yöntemi ile Mayın Patlama Benzetimi, 5. Savunma Teknolojileri Kongresi”, Ankara, Turkey.
- M. E. Cerit, M.A. Guler, B. Bayram, B. Gerçeker, E. Karakaya, (2009), “Farklı Kesitli Ezilme Kutularının Enerji Yutma Kapasitelerinin Karşılaştırılması”, 16. Ulusal Mekanik Kongresi, Kayseri, Turkey.
- M.A. Guler, M. Koç, U. Stelzmann, (2008), “Springback Evaluation for Flange Design in Stamping of Advanced High Strength Steels”, 4th Automotive Technologies Congress, Bursa, Turkey.
- K. Elitok, M.A. Guler, F.H. Avcı and U. Stelzmann, (2005), “Regulatory Bus Roll-Over Crash Analysis Using LS-DYNA”, Conference for Computer-Aided Engineering and System Modeling, İstanbul, Turkey.

CONFERENCE PRESENTATIONS

- **M.A. Guler**, F. Ozer, M. Yenice and M. Kaya, (2010), “Springback Prediction of DP600 Steels for Various Material Models, The 13th International Conference on Metal Forming, Toyahashi, Japan.
- T. Apatay, S. Dag, **M.A. Guler** and M. Gulgeç, (2010), “Subsurface stresses in an FGM coating loaded by a sliding flat punch”, Fourth European Conference on Computational Mechanics, Minisymposium on Fracture and Contact Mechanics for Interface Problems, Paris, France.
- **M.A. Guler**, (2008), "Mechanical Failure of Thin Films Bonded to Graded Substrates", The Mechanics Conference to Celebrate the 100th Anniversary of the Department of Engineering Science and Mechanics, Professor Liviu Librescu Memorial Sessions, Virginia Tech, Blacksburg, Virginia, USA.
- S. Dag, **M.A. Guler** and B. Yildirim, (2007), "Contact mechanics of laterally graded materials", 9th US National Congress on Computational Mechanics, San Fransisco, California, USA.
- **M.A. Guler**, (2003), "The Effect of Material Grading on the Contact Mechanics of FGM Coatings", ASME International Mechanical Engineering Congress and RD&D Expo, Washington DC, USA.
- F. Erdogan, S. Dag and **M.A. Guler**, (2000), "Contact and crack problems in functionally graded materials", 20th International Congress of Theoretical and Applied Mechanics, August 2000, Chicago, Illinois, USA.

GRANTED RESEARCH PROJECTS

- **M.A. Guler** and E. Acar, (2009 – 2011), “Accurate prediction and robust optimization of springback in dual phase steels during sheet metal forming operations”, funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK).
- **M.A. Guler**, (2008 – 2010), “Development of passive safety system for absorbing crash energy during frontal crashes involving intercity busses”, funded by Ministry of Industry and Trade of Turkey under the scope of SAN-TEZ project.
- **M.A. Guler** and S. Dag, (2007 – 2009), “Computational and Analytical methods for contact mechanics analysis of functionally graded materials”, funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK).

M.S. STUDENTS

- Fırat Özer, (2009 – present), “Springback prediction in Advanced High Strength Steels after forming operations”
- Deniz Bekar, (2011), “Robust optimization of springback predictions in dual phase steels during sheet metal forming operations” co-supervised with Dr. E. Acar
- L. Sözen, (2011), “Springback prediction in rotary tube bending operations”
- M.E. Cerit, (2011), “Development of passive safety system for absorbing crash energy during frontal crashes involving intercity busses”
- Y.F. Gülver, (2009), “Mechanical modeling of thin films bonded to functionally graded coatings”.

REFERENCES

- Professor F. Erdogan, Mechanical Engineering Department, Lehigh University, 19 Memorial Drive West, Bethlehem, PA 18015, USA, Tel: +1 (610) 866 6204, E-mail: fe00@lehigh.edu
- Professor H.F. Nied, Mechanical Engineering Department, Lehigh University, 19 Memorial Drive West, Bethlehem, PA 18015, USA, Tel: +1 (610) 758 4128, E-mail: hfn2@lehigh.edu
- Professor U. Kaynak, Mechanical Engineering Department, TOBB University of Economics and Technology, Sogutozu, 06560, Ankara, TURKEY, Tel: +90 (312) 292 4065, E-mail: ukaynak@etu.edu.tr
- William R. (Bill) Wheeler, Vice President, CD-adapco, NY Office, 60 Broadhollow Road, Melville, NY 11747, USA, Tel: +1 (631) 549-2300 ext 117, E-mail: bill.wheeler@us.cd-adapco.com
- İbrahim Eserce, Technology Director, TemSA Global, Mersin Yolu üzeri, 10. km., Adana, 01355, TURKEY, Tel: +90 (322) 355 6125, E-mail: ibrahim.eserce@temsaglobal.com