

## **Lamyaa El-Gabry, Ph.D.**

Department of Mechanical & Aerospace Engineering  
Princeton University  
D324 Engineering Quad, D-Wing  
Princeton, NJ 08544  
Tel: 609.258.1916, Cell: 619.319.4696  
Email: [lelgabry@princeton.edu](mailto:lelgabry@princeton.edu)

### **BRIEF BIOGRAPHY**

Lamyaa El-Gabry received her PhD in Mechanical Engineering from Rensselaer Polytechnic Institute in Troy, New York and her BS in Mechanical Engineering from the American University in Cairo, Egypt. In 2006, she was appointed Assistant Professor in Mechanical Engineering at the American University in Cairo and in 2012 was tenured and promoted to Associate Professor. El-Gabry joined the faculty at Princeton in Fall 2017 as lecturer in the Mechanical and Aerospace Engineering Department. Prior to her academic appointment, she held various engineering and research roles at General Electric, (1998-2006). She has nearly 25 years of experience in gas turbines. Her work includes gas turbine cooling design, combustion controls, experimental heat transfer, generator ventilation design and project engineering, and Computational Fluid Dynamics (CFD) and heat transfer methods development for energy and propulsion. Dr. El-Gabry's ongoing research includes film cooling, turbine aero and heat transfer, computational fluid dynamics, and engineering education. Dr. El-Gabry holds two patents and has authored over 50 journal and conference papers and currently serves as Associate Editor for the ASME Journal of Turbomachinery. She is a member of ASME and since 2004, has been actively reviewing, organizing, and chairing technical sessions at the ASME Turbo Expo and IMECE. She is an active member of the ASME gas turbine heat transfer committee, organizing over 25 Turbo Expo sessions and serving as Vanguard chair in 2015, 2016, 2018, 2019, 2021, and 2022. She is a member of IGTI Scholarship Evaluation Committee and is Chair of the ASME Turbo Expo Education Committee. El-Gabry serves as Secretary/Treasurer of the ASEE Community-Engaged Division committee.

Dr. El-Gabry was awarded five NASA Glenn Faculty Fellowships (2007, 2008, 2010, 2011, and 2015), the 2009 Air Force Faculty Fellowship, and KTH Royal Institute of Technology fellowship in 2010/2011. She has served as affiliated Senior Faculty at the KTH Department of Energy Technology in Stockholm, Sweden and a consulting senior principal engineer in the heat transfer group at Solar Turbines Inc.

Dr. El-Gabry teaches courses in renewable energy, fluid mechanics, thermodynamics, and numerical methods. She has served on the University Senate, the Senate Academic Affairs committee, the School of Sciences & Engineering Academic Affairs committee, the University faculty services committee, the sustainable campus committee, the graduate studies departmental committee, the AUC press publications committee, and the ABET accreditation departmental committee. At Princeton, she is a BSE First Year Advisor and Faculty Fellow, Whitman College. She serves on the MAE Undergraduate Faculty Committee, is Faculty advisor to Women in Aeronautics and Astronautics and is the lead math instructor at New Jersey youth correctional facilities as part of the Prison Teaching Initiative. She consults on water/energy topics in Egypt and the Middle East including desalination, renewable energy based integrated aquaculture and hydroponics systems.

## **EDUCATION**

### **Ph.D. Mechanical Engineering, 2003**

Rensselaer Polytechnic Institute, Troy, New York

Dissertation: 'Local Heat Transfer Distribution on Smooth and Roughened Surfaces under an Array of Angled Impinging Jets'

### **B. S. Mechanical Engineering, 1998 (highest honors)**

The American University in Cairo, Egypt

## **EXPERIENCE**

### ***Princeton University, Princeton, New Jersey***

Lecturer, Mechanical and Aerospace Engineering Department, 8/2017 – present

### ***The American University in Cairo, Egypt***

Associate Professor, Mechanical Engineering Department, 9/2012 – 6/2020

Assistant Professor, Mechanical Engineering Department, 9/2006 – 8/2012

### ***United States Department of Justice, International Trade Field Office, New York***

Expert witness, 4/2018 – 3/2020

### ***Solar Turbines Incorporated, San Diego, California***

Visiting Research Fellow, Heat transfer 6/2017 – 3/2018

### ***KTH Royal Institute of Technology, Stockholm, Sweden***

Affiliated Senior Faculty, Department of Energy Technology, 5/2012 – 2015

Visiting Researcher, Department of Energy Technology, 9/2010 – 2/2011

### ***NASA Glenn Research Center, Cleveland, Ohio***

Research Fellow, Turbomachinery & Heat Transfer Branch, Summers 2015, 2011, 2010, 2008 & 2007

### ***Xzero AB, Stockholm, Sweden***

Consultant, Membrane distillation water desalination projects, 12/2010 – 12/2012

### ***Northeastern University, Boston, Massachusetts***

Instructor, International Fluid Mechanics course, Summer 2010

### ***Air Force Research Lab, Wright Patterson Air Force Base, Ohio***

Visiting Researcher, Propulsion Directorate, Air Force Research Lab, 6/2009 – 8/2009

### ***GE Global Research Center, Niskayuna, New York***

Mechanical Engineer, Fluid Mechanics Lab, Energy & Propulsion Technologies, 9/2003-8/2006

Heat Transfer Research Engineer, Thermal & Fluid Systems Program, 1/2000-10/2000

### ***GE Energy, Schenectady, New York***

Ventilation & Heat Transfer Engineer, Generator Technology Dept, 10/2000-9/2003

Gas Fuel & Combustion Systems Controls Engineer, 6/1999-1/2000

Gas Turbine Design Engineer, Gas Turbine Engineering, 8/1998 – 6/1999

Mechanical Engineer, Power Plant Engineering, Power Plant Systems Department, 6/1997-9/1997

## **TEACHING EXPERIENCE**

### **Princeton University**

**2017 - present**

MAE 221	Thermodynamics
MAE 224	Integrated Engineering Science Laboratory
MAE 228	Energy Technology for the 21 <sup>st</sup> Century
MAE 328	Energy for a Greenhouse-Constrained World
MAE 336	Viscous Flow

### **The American University in Cairo**

**2006 - 2017**

ENGR 101	Introduction to Engineering, 1 cr.
ENGR 261	Fundamentals of Fluid Mechanics, 3 cr.
ENGR 261 Lab	Fundamentals of Fluid Mechanics Lab
ENGR 313	Engineering Analysis & Computation, 3 cr.
MENG 361	Fundamentals of Thermodynamics, 3 cr.
MENG 362	Applied Fluid Mechanics, 3 cr.
MENG 362 Lab	Applied Fluid Mechanics Lab
MENG 365	Applied Thermodynamics, 3 cr.
MENG 365 Lab	Applied Thermodynamics Lab
MENG 490	Senior project I, 1 cr.
MENG 491	Senior project II, 2 cr.
MENG 492	Independent study, 1 cr.
MENG 497	Industrial training, 1 cr.
MENG 575	CFD and Turbulence Modeling, 3 cr.

### **Northeastern University**

**Summer 2010**

MIMU 3480, International Applications of Fluid Mechanics

## **SUPERVISION OF STUDENT WORK**

### **UNDERGRADUATE WORK**

- “Campus Energy Dispatch Optimization,” - Harry Shapiro, September 2021 – May 2022
- “A Small-Scale Hydroponics System: Designed Around Botany” – Delia Batdorff, Sep 2021-May 2022
- “Designing a Small-Scale Aquaponic System,” – Gabby Chapman, Sep 2020 – May 2021
- “Aquaponics: Data Collection and Monitoring for System Health” – Stephanie Domaradsky, Sep 2020 – May 2021
- “CFD Simulation of flow around seal whisker” Chris Ferrigine, Sep 2020 – May 2021
- “Practical Engineering Solutions to Local Village Problems: Aquaponics Field Work and Lab scale Aquaponics/Hydroponics kits,” Leonardo Espinoza, Yousuf Tariq-Shuaib, Nadia Ralston, Marie Elia, Ozoh Chukwuebuka, Mohamed Hassan, Andrew Khalaf, and Nour-Lyna Boulgamh – Summer 2020
- “CFD modeling of film cooling holes,” Abhinav Agarwal, Summer 2020 – Spring 2021
- “Design of Wind/Solar Powered Aquaponic System for El Heiz,” – Satchel Joseph, Spring 2020
- “Thermoacoustic Heat Pump,” Nick Chen, Fall 2019 – Spring 2020

- “Water management systems in rural areas of Egypt,” Adhitya Raghavan, Spring 2019 – Spring 2020
- “Practical Engineering Solutions to Local Village Problems: Wind Pumping and Water Resource Management,” Sierra Castaneda, Robbie Cohen, Nick Nickelson, Lencer Ogutu – Summer 2018.
- “Solar powered Stirling engine,” Ali Abdulbaset, Amr Sultan, Ahmed Ayman, Amr Elsheikh, Yahia Elramly, Fall 2016 – Spring 2017
- “Hybrid solar air conditioner with integrated water heating system for domestic use,” Fady Mansour, Khaled Salem, Khaled Hassan, Hamza Daabis, Omar Hegazy, Fall 2016 – Spring 2017
- “Extracting irrigation water from sewage sludge,” Ramy Anwar, Reem El Ebiary, Seif El Saie, Mahmoud Kamel, Karim Taha, Mohie El Deen Zaki, Spring 2016/Fall 2016
- “Design and manufacturing of an exoskeleton,” Mostafa Foda, Saif Mahgoub, Yossr El Sayed, Malak Ismail Sabry, John Yousry Hendi, Karim Ayad, Spring 2016/Fall 2016.
- “Biomimicry of the Pitch and Heave Motion of Flapping Wings,” Mohamed Abdelmeguid, Mohamed Aboul Atta, Abdelrahman Azmi, Amir Mikhail, Ali Shaltout, Omar Soliman, Fall 2015/Spring 2016.
- “Formula 3 car body design,” Jan Mehany, Mohamed Omar, Khaled M. Abd El Aal, Sara Sabri, Yossr El-Sayed, Zaki El-Sweedy, Fall 2015/Spring 2016.
- “Small-scale mobile wind turbine for off-grid electricity generation,” Adam Ezroua, Omar Sherif, Ramez Kiriakos, Ramez Habib, Maged Kiriakos, Ahmed Shalaby. Fall 2014/Spring 2015
- “Portable solar-powered cooling device based on ammonia-absorption cycle,” Andrew Bishara, Ahmed Gomaa, Ali El-Banna, Karim Khafaga, Mohamed Magdi, Fall 2011/Spring 2012.
- “Heating and evaporative cooling of solar house,” Dina El Abd, Mai El-Sherif, Fourat Moussa, Mohamed Sanad, Ahmed El-Sioufy, Eslam El Kelesh, Peter Boutros, Fall 2011/Spring 2012.
- “Solar Decathlon house mechanical design,” Ashraf Abdel Aziz, Ahmed Kandeel, Mohab Abdel Aziz, Nayef Haydar, Omar Karawia, Fall 2011/Spring 2012.
- “Concentrated solar collector,” Ahmed Akram, Ahmed Ismail, Ali Abdel Khaliq, Daoud Ghaly, Fady Selim, Khaled Metwally, Youssef Stino, Fall 2009 / Spring 2010.
- “Maglev: Magnetic levitation vertical axis wind turbine,” Ahmed Kamal, Anas El Hertani, Asmaa Aboulkheir, Ibrahim El Shenawy, Mohamed Kassem, Fall 2009 / Spring 2010.
- “Magnus effect boat,” Amr Gamal, Mahmoud Sorour, Fady Barsoum, Hossam El Sallab, Omar Abas Wagdy, Peter Atef, Ahmed El Killany, Fall 2008 / Spring 2009.
- “Furniture from Waste,” Ahmed El Taher, Ehab Said Saber, Mohamed Said Abdou, Mina El-Dabaa, Peter Ramses, Sherif Asem. Fall 2008/ Spring 2009.
- “Biodiesel – Alternative Energy Source,” Essam Abdel Razek, Hesham Ali, Mohamed Radwan, Taha Roushdy. Fall 2007 / Spring 2008.
- “Modification of the O-sepa Separator,” Ahmed Shimi, Mahmoud El Sebaie, Omar Al Kaaki, Mariam Whiliam. Fall 2006/ Spring 2007.
- “AUC pool water consumption study,” Mahmoud Lotfy, Karim Ghoneim, Karim Nada, Farah al Sakka, Yasmine Mohamed, Hany Samaan, Mai Sherif, Spring 2011.

- Greywater treatment options for Solar Decathlon proposal, Hammam Khoudary, 2010
- Parabolic trough frame design/assembly & turbulated blade passage literature survey, Mohamed Mattar (summer intern from University of Michigan Ann Arbor), 2010.
- Solar energy work-study research projects, Ahmed Batran, Wessam El Baz, Samaa Arafa, Adam Ezroura, Mohamed Selim, Amira Shoukry, 4/2009 – Present.
- Multiple effect diffusion still, Hala Omar, Taha Roushdy, Omar Roushdy, 2009
- Computation of Unsteady Heat Transfer on the hub of a Turbine, Hala Omar, 2008

## GRADUATE WORK

- Alshehaby, Mohamed, Film cooling numerical analysis and film hole shape optimization, 6/2013 – present
- Elzaabalawy, Assem, Comparison of varying fidelity CFD modeling approaches for predicting film cooling, 8/2016 – 6/2017 (PhD student at Ain Shams University)
- Ragab, Kasem, External surface heat transfer analysis of nozzle guide vane, 3/2013 – 9/2016
- Elsayy, Ahmed, Performance and analysis of chevron plate solar thermal collector, 5/2013 – 12/2016 (at Cairo University)
- Mobarez, Amr, Numerical simulation of pulsed film cooling on a turbine-blade leading edge model, 2012 – 2016 (at Ain Shams University)
- Alameldin, Ahmad, 'Numerical study of film cooling influence on performance of transonic vane cascade,' 9/2012-1/2014.
- Shalash, Karim, Film cooling CFD modeling, 9/2011 – 12/2013 (at Arab Academy for Science, Technology, and Maritime Transport, Alexandria)
- Abdelkhalik, Hossam, 'Modeling of turbulent cavitation,' 09/2010-6/2012.
- Elkersh, Hussein, Heat transfer and pressure drop in detached ribs, 9/2011 – 6/2012
- Siddique, Waseem, 'Numerical study of turbulated passages,' Sponsored by Higher Education Commission of Pakistan and KTH, 5/2010 – 12/2012 (at KTH Stockholm)
- Saha, Ranjan, 'Secondary flows in vane annular sector cascade,' 10/2010 – 6/2011 (at KTH Stockholm)
- Tahani, Elahe, 'CFD modeling of detached film cooling flow,' Sponsored by Urmia University of Technology, 11/2010 – 6/2012 (at UUT, Iran).
- Khalil, Kareem, 'Measurements in gas turbine vane annular cascade,' Sponsored by KAUST and KTH, Summer 2011 (at KTH Stockholm)
- Abdelrahman, Ahmed, 'CFD modeling of vane cascade,' Sponsored by KAUST and KTH, Summer 2011 (at KTH Stockholm)
- Anthony, William, 'Analysis of the flow through a Francis turbine runner using computational fluid dynamics,' 10/2006 – 04/2008.

## **AWARDS, FELLOWSHIPS AND HONORS**

- 250<sup>th</sup> Anniversary Fund for Innovation in Undergraduate Education 2021
- Princeton Engineering Commendation List for Outstanding Teaching 2021
- Council on Science and Technology (CST) Community of Practice Fellow 2021
- CST Annual Call Funding Award 2021
- High Meadows Institute Funding Award 2021
- William Pierson Field Lecture Fund 2021, 2019, 2018, 2017
- Best Paper Award in Education at ASME Turbo Expo (GT2019-92060) 2020
- Bartlett Family Fund for Innovation and International Collaboration 2019
- 250<sup>th</sup> Anniversary Fund for Innovation in Undergraduate Education 2019
- Bartlett Family Fund for Innovation and International Collaboration 2018
- AUC Provost Award for Service in Center for Learning & Teaching 2016
- NASA Glenn Faculty Fellowship 2015
- NASA Glenn Faculty Fellowship 2011
- KTH Royal Institute of Technology Fellowship 2010
- NASA Glenn Faculty Fellowship 2010
- Air Force Faculty Fellowship 2009
- NASA Glenn Faculty Fellowship 2008
- NASA Glenn Faculty Fellowship 2007
- General Electric Energy & Propulsion Technologies Award 2005
- General Electric Energy & Propulsion Technologies Award 2004
- AIAA recognition 2004
- General Electric graduate student award 1998-2003
- General Electric Patent Award 2003
- General Electric Six Sigma Award 2002
- General Electric Corporate Recognition Award 1999, 2000, and 2001
- General Electric Power Award 1999
- Dean's List, American University in Cairo 1996-1998
- American University in Cairo scholarship 1995-1998
- Emily Roebling Scholarship, Rensselaer Polytechnic Institute 1994

## **PEER-REVIEWED JOURNAL ARTICLES**

1. M. Alshehaby, L. El-Gabry, 2022, Film Cooling Numerical Study: Turbulence Modeling and Optimization of Novel Cooling Hole Geometry, *Journal of the Global Power and Propulsion Society*. 6:39-60.
2. L. El-Gabry, M. Jaskolski, 2019, "Offering Engineering Students Global Perspective Through Experiential Learning Project in Wind Energy and Sustainability." *ASME. J. Eng. Gas Turbines Power*. 141(10):101008-101008-11. doi:10.1115/1.4044205.
3. K. Ragab, L. El-Gabry, 2018, "Heat Transfer Analysis of the Surface of Nozzle Guide Vane in Transonic Annular Cascade." *Journal of Thermal Science and Engineering Applications*.
4. L. El-Gabry, 2018, "Case study on community-based learning: toy design project for children in Egyptian squatter community." *European Journal of Engineering Education*
5. L. El-Gabry, R. Saha, J. Fridh, and T. Fransson, 2014, "Measurements of hub flow interaction on film cooled nozzle guide vane in transonic annular cascade," *ASME Journal of Turbomachinery*, vol. 137, doi:10.1115/1.4029242
6. L. El-Gabry, D. Thurman, P. Poinsatte, and J. Heidmann, 2013, "Detailed Velocity and turbulence measurements in an inclined large-scale film cooling array," *ASME Journal of Turbomachinery*, vol. 135, doi: 10.1115/1.4023347
7. L. El-Gabry and J. Heidmann, 2013, "Numerical Study on the Sensitivity of Film Cooling CFD Results to Experimental and Numerical Uncertainties," *International Journal for Computational Methods in Engineering Science and Mechanics*, 14:4, pp 317-328.
8. W. Siddique, I.V. Shevchuk, L. El-Gabry, N.B. Hushmandi, T.H. Fransson, 2013, "On flow structure, heat transfer and pressure drop in varying aspect ratio two-pass rectangular channel with ribs at 45°," *Heat and Mass Transfer*, Vol. 49, pp 679-694
9. W. Siddique, L. El-Gabry, I. Shevchuk, N. Hushmandi, and T. Fransson 2012, "Flow Structure, Heat Transfer and Pressure Drop in Varying Aspect Ratio Two-Pass Rectangular Smooth Channels," *Heat and Mass Transfer*, Vol. 48, pp 735-748.
10. M. A. Nosier, A.R. Elbaz, T.N. Aboulfetouh, L. El-Gabry, 2012, "Characteristics of Turbulent Wakes Generated by Twin Parallel Cylinders," *Journal of Fluids Engineering*, vol. 134, doi 10.1115/1.4007889
11. W. Siddique, L. El-Gabry, I. Shevchuk, and T. Fransson, 2012, "Validation and analysis of numerical results for a two-pass trapezoidal channel with different cooling configurations of trailing edge," *ASME Journal of Turbomachinery*, vol. 135; doi:10.1115/1.4006534
12. K. Metwally, A. Akram, L. El-Gabry, 2011, "Approach to designing a solar concentrator for small-scale remote power application," *Journal of Renewable and Sustainable Energy*, vol. 3, 063114; doi:10.1063/1.3671649
13. L. El-Gabry and R. Rivir, 2011, "Effect of Pulsed Film Cooling on Leading Edge Film Effectiveness," *Journal of Turbomachinery*, vol. 134, doi: 10.1115/1.4003653.
14. L. El-Gabry and A. Ameri, 2010, "Comparison of Steady and Unsteady RANS Heat Transfer Simulations of Hub and Endwall of a Turbine Blade Passage," *ASME Journal of Turbomachinery*, vol. 133, 031010.
15. L. El-Gabry, J. Heidmann, and A. Ameri, 2010, "Penetration Characteristics of Film-Cooling Jets at High Blowing Ratio," *ALAA Journal*, vol. 48 no. 5, pp. 1020-1024.
16. L. El-Gabry, (2009), "Numerical Modeling of Heat Transfer on a Gas Turbine Blade Tip: Effect of Tip

Clearance and Tip Geometry,” *ASME Journal of Thermal Science and Engineering Applications* (DOI: 10.1115/1.4000547).

17. L.A. El-Gabry and D. Kaminski, 2005, Experimental Investigation of Local Heat Transfer Distribution on Smooth and Roughened Surfaces under an Array of Angled Impinging Jets, *ASME Journal of Turbomachinery*, vol. 127, pp. 532-544.
18. L.A. El-Gabry and D. A Kaminski, 2005, Numerical Investigation of Jet Impingement with Cross Flow – Comparison of Yang-Shih and Standard k-epsilon Turbulence Models, *Numerical Heat Transfer, Part A*, vol. 47, pp. 441-469.

#### **Forthcoming Work**

19. H. Shapiro, L. El-Gabry, 2022, A Novel Mechanical Approach to Carbon-Adjusted Tri-Generation Plant Optimization, *Applied Energy Journal* (under review)
20. L. El-Gabry, C. Ferrigine, 2022, Morphology and flow characterization of Pinniped Vibrissae, *Bioinspiration and Biomimetics* (in preparation for submission)

#### **PEER-REVIEWED CONFERENCE PROCEEDINGS AND PAPERS**

- L. El-Gabry, and M. Jaskolski, 2021, “Implementation of Sustainable Integrated Aquaculture, Aquaponic, and Hydroponic Systems for Egypt's Western Desert Through Global Community Engaged Research,” *2021 ASEE Annual Conference*, virtual.
- L. El-Gabry, 2021, “Development, Implementation and Assessment of Thermodynamics Lab Kits for Remote Lab Instruction,” *2021 ASEE Annual Conference*, virtual.
- M. Alshehaby and L. El-Gabry, 2019, “Irregular Shape Optimization for the Film Cooling Nozzle of a Gas Turbine using Numerical Optimization Tool,” *2019 ASME International Mechanical Engineering Congress & Expo IMECE*, Salt Lake City, 2019-10974.
- L. El-Gabry, M. Jaskolski, 2019, “Offering Engineering Students Global Perspective Through Experiential Learning Project in Wind Energy and Sustainability,” *2019 ASME Turbo Expo*, Phoenix, GT2019-92060.
- L. El-Gabry, H. Xu, K. Liu, J. Chang, M. Fox, 2018, “Effect of Coolant Injection Angle on Nozzle Endwall Film Cooling: Experimental and Numerical Analysis in Linear Cascade,” *2018 ASME Turbo Expo*, Oslo, GT2018-75877.
- K. Ragab and L. El-Gabry, 2017, “Heat Transfer Analysis of the Surface of Nonfilm-Cooled and Film-cooled Nozzle Guide Vanes in Transonic Annular Cascade,” *2017 ASME Turbo Expo*, Charlotte, GT2017-64982.
- M. Alshehaby, K. Ragab and L. El-Gabry, 2017, “Numerical Optimization of Geometry Parameters for Shaped Film Cooling Holes,” *2017 ASME Turbo Expo*, Charlotte, GT2017-65063.
- Mobarez, A., A. Elbaz, and L. El-Gabry, 2015, “Numerical Simulation of Pulsed Film Cooling on a Turbine-Blade Leading Edge Model,” *16<sup>th</sup> International Conference on Aerospace Sciences & Aviation Technology*, May 26-28, Cairo, Egypt.
- Alameldin, A. and L. El-Gabry, 2015, “Assessment of Different CFD Modeling Techniques for Film Cooling,” *Proceedings of International Gas Turbine Congress 2015 Tokyo* November 15-20, 2015, Tokyo, Japan.



- Alshehaby, M. and L. El-Gabry, 2015, "Comparative Study between Hole Shapes for Flat Plate Film Cooling Using Numerical Model," Proceedings of *International Gas Turbine Congress 2015 Tokyo* November 15-20, 2015, Tokyo, Japan.
- K. Ragab and L. El-Gabry, 2015, "Prediction of heat transfer distribution over the surface of a nonfilm-cooled nozzle guide vane in a transonic annular cascade," *2015 ASME Turbo Expo*, Montreal, GT2015-43221.
- K. Shalash, L. El-Gabry, and M. Abo El-Azm, 2014, " Investigation of a Novel Discrete Slot Film Cooling Scheme," *2014 ASME Turbo Expo*, Dusseldorf, GT2014-26019.
- A. Alameldin, L. El-Gabry, J. Fridh, and R. Saha, 2014, "CFD Analysis of Suction and Pressure Side Film Cooling Influence on Vane Aero Performance in a Transonic Annular Cascade," *2014 ASME Turbo Expo*, Dusseldorf, GT2014-26617.
- K. Shalash., L. El-Gabry, and M. Abo El-Azm, 2013, "Numerical modeling of slot film cooling using a wall function," *2013 ASME Turbo Expo*, San Antonio, GT2013-94127.
- A. Alameldin, L. El-Gabry, 2013, "CFD analysis of secondary flow losses in an annular sector cascade," Proc. *11<sup>th</sup> International Congress of Fluid Dynamics & Propulsion*, Alexandria, Paper ICFD-11-EG-4059
- K. Shalash., L. El-Gabry, and M. Abo El-Azm, 2013, "Assessment of RANS CFD simulation coupled with a wall function for gas turbine film cooling," Proc. *11<sup>th</sup> International Congress of Fluid Dynamics & Propulsion*, Alexandria, Paper ICFD-11-EG-4094
- L. El-Gabry, R. Saha, J. Fridh, and T. Fransson, 2012, "Measurements of hub flow interaction on film cooled nozzle guide vane in transonic annular cascade," *2012 ASME Turbo Expo*, Copenhagen, Paper GT2012-68088.
- W. Siddique, L. El-Gabry, and T. Fransson, 2012, "Design Optimization of Internally Cooled Trailing Edge at Engine Similar Conditions- A Conjugate Heat Transfer Problem," *2012 ASME Turbo Expo*, Copenhagen, Paper GT2012-68303.
- A. Basha, H. Dolfe, M. Åslin, and L. El-Gabry, 2011, "Membrane distillation test for concentration of RO brine at WESSCO, Jeddah," *IDAWC/PER11-351*.
- L. El-Gabry, D. Thurman, P. Poinatte, and J. Heidmann, 2011, "Turbulence and heat transfer measurements in an inclined large scale film cooling array – part I, velocity and turbulence measurements," *2011 ASME Turbo Expo*, Vancouver, Paper GT2011-46491.
- D. Thurman, L. El-Gabry, P. Poinatte, and J. Heidmann, 2011, "Turbulence and heat transfer measurements in an inclined large scale film cooling array – part II, temperature and heat transfer measurements," *2011 ASME Turbo Expo*, Vancouver, Paper GT2011-46498.
- W. Siddique, L. El-Gabry, I. Shevchuk, and T. Fransson, 2011, "Flow Structure, Validation and analysis of numerical results for a two-pass trapezoidal channel with different cooling configurations of trailing edge," *2011 ASME Turbo Expo*, Vancouver, Paper GT2011-46266.
- L. El-Gabry, A. Sherif, and A. El-Zafarany, 2011, "Conceptual design of solar house built for desert extremes," *2011 Global Conference on Renewable Energy and Energy Efficiency for Desert Regions*, Amman, GCREEDR Paper 128.
- K. Metwally, L. El-Gabry, and A. Makhlof, 2010, "Approach to designing a solar concentrator for small-

scale remote *power* application,” *2010 ASME International Mechanical Engineering Congress & Expo*, Vancouver, IMECE2010-38218.

- L. El-Gabry and R. Rivir, 2010, “Effect of Pulsed Film Cooling on Leading Edge Film Effectiveness,” *2010 ASME International Mechanical Engineering Congress & Expo*, Vancouver, IMECE2010-37354.
- L. El-Gabry, 2010, “Community based learning in ENGR 101 term project: toy design for school children in disadvantaged Old Cairo community,” *2010 ASEE Conference & Expo*, Louisville, Paper AC2010-68.
- A. Ameri and L. El-Gabry, 2009, “Comparison of Steady and Unsteady RANS Heat Transfer Simulations of Hub and Endwall of a Turbine Blade Passage,” *Proceedings of 2009 ASME Summer Heat Transfer Conference*, San Francisco, Paper HT2009-88394.
- L. El-Gabry and A. Ameri, 2008, “Computation of Unsteady Heat Transfer on the Casing of a Turbine Blade: Effect of Inlet Total Temperature Wake,” *Proc. 9<sup>th</sup> International Congress of Fluid Dynamics & Propulsion*, Alexandria, Paper ICFDP9-EG-234.
- A. Ameri and L. El-Gabry, 2008, “Computation of Unsteady Heat Transfer on the Casing of a Turbine Blade,” *Proc. 12<sup>th</sup> International Symposium on Transport Phenomena and Dynamics of Rotating Machinery*, Honolulu, Paper ISROMAC12-2008-20191.
- L. El-Gabry, 2007, “Numerical Modeling of Heat Transfer on a Gas Turbine Blade Tip: Effect of Tip Clearance and Tip Geometry,” *Proc. 2007 ASME Turbo Expo*, Montreal, Paper GT2007-27008.
- A. Tolpadi, J. Tallman and L. El-Gabry, 2005, “Turbine Airfoil Heat Transfer Predictions Using CFD,” *Proc. 2005 ASME Turbo Expo*, Reno, Paper GT2005-68051, 2005.
- J. Tallman, A. Tolpadi and L. El-Gabry, 2004, “Gas Turbine External Heat Transfer Predictions using CFD,” *ALAA/ASME Northeast Aerospace/Mechanical Engineering Symposium*. Albany
- L. A. El-Gabry and D. Kaminski, 2001, “Experimental Investigation of Local Heat Transfer Distribution on Smooth and Roughened Surfaces under an Array of Angled Impinging Jets,” *Proc. 2001 ASME International Mechanical Engineering Congress and Exposition*, New York, Paper 2-14-1-1.

## **NASA AND GOVERNMENT REPORTS**

- Material and Flow Characterization of Pinniped Vibrissae, 2015, L. El-Gabry, D. Thurman, P. Poinatte, V. Shyam, NASA- OAI (Ohio Aerospace Institute) Report, 2015
- Procedure for determining length scales using hotwire anemometry, 2011, L. El-Gabry, D. Thurman, P. Poinatte, NASA/TM NF1676B TN4063
- Advanced turbulence measurements and comparison with CFD, Lamyaa El-Gabry, NASA-OAI (Ohio Aerospace Institute) Report, 2011
- Turbulence and heat transfer measurements in an inclined large-scale film cooling array, Lamyaa El-Gabry, NASA-OAI (Ohio Aerospace Institute) Report, 2010
- Effect of pulsed film cooling on leading edge effectiveness, Lamyaa El-Gabry, U.S. Air Force-ASEE (American Society of Engineering Educators) Report, 2009
- L. El-Gabry, J. Heidmann, and A. Ameri, 2009, “Numerical Analysis of Film Cooling at High Blowing Ratio,” *NASA/TM—2009-215517*.

- Numerical analysis of film cooling at high blowing ratio, Lamyaa El-Gabry, NASA-OAI (Ohio Aerospace Institute) Report, 2008
- Part I - Analysis of a gas turbine shroud: Effect of unsteadiness due to wake passing, Part II – CFD modeling of film effectiveness, Lamyaa El-Gabry, NASA-OAI (Ohio Aerospace Institute) Report, 2007

### **INVITED SEMINARS AND TALKS**

- “CFD & Turbulence Modeling,” Seminar, Solar Turbines Incorporated, San Diego, California, U.S.A August 2, 2017.
- “Vane Film Cooling,” Seminar, Solar Turbines Incorporated, San Diego, California, U.S.A July 12, 2017.
- “Fundamentals of Film Cooling,” Seminar, Solar Turbines Incorporated, San Diego, California, U.S.A June 21, 2017.
- “Towards More Sustainable Water and Energy Agendas for Africa”, Panelist, 2<sup>nd</sup> International Conference on Solar Energy Solutions for Electricity and Water Supply in Rural Areas, Cairo, Egypt October 2016.
- “Introduction to Gas Turbine Internal Cooling,” Paper GT2016-56048, *2016 ASME Turbo Expo*, Seoul, Korea, June 2016.
- “Careers in Turbomachinery” Panelist, ASME student advisory committee panel session, 2016 ASME Turbo Expo, Seoul, Korea, June 2016.
- “Active learning strategies in introductory engineering and mechanical engineering courses,” AUC School of Sciences & Engineering Teaching and Learning Forum, New Cairo, Egypt, September 30, 2014.
- “Community-Based Learning and Civic Engagement as New Modes of Outreach,” AUC Science Outreach and Communication Workshop, Cairo, January 14, 2012.
- “Solar Decathlon Europe 2012 and designing for sustainability,” Escuela Técnica Superior de Arquitectura de Madrid, Universidad Politécnica de Madrid, Oct 6, 2011.
- “Turbulence characterization for detached film coolant jet,” NASA Glenn Research Center, Cleveland, Ohio, August 18, 2011.
- “Turbulence measurements in an inclined large scale film cooling array and comparison with CFD,” Poster session, NASA Glenn Research Center, Cleveland, Ohio, August 10, 2011.
- “University Programs Graduate Study Forum,” NASA Glenn Research Center, Cleveland, OH, July 2011.
- “Community based learning in Engineering,” AUC Intensive English Program guest lecture, March 2011.
- “Turbulence modeling,” KTH Royal Institute of Technology, Stockholm, Sweden, January 2011.
- “Challenges in turbine heat transfer,” LTH Lund Institute of Technology, Lund, Sweden, December 2010.
- “Three-part seminar on film cooling,” Siemens Industrial Turbomachinery AB, Finspång, Sweden, November 2010
- “Research topics in gas turbine heat transfer,” KTH Royal Institute of Technology, Stockholm, Sweden, September 2010

- “Turbulence and heat transfer measurements in a jet-in-cross flow for film cooling applications,” NASA Glenn Research Center, Cleveland, Ohio, August 2010.
- “Community based learning in ENGR 101,” Community Based Learning Symposium The American University in Cairo, September 2009.
- “A trip down memory lane: selected topics in heat transfer research,” Graduate seminar, The American University in Cairo, April 30, 2009
- “Pulsating film cooling: an experimental investigation,” Graduate seminar, The American University in Cairo, October 22, 2009
- “Numerical analysis of film cooling at high blowing ratio” sponsored by the Research & Technology Directorate, NASA Glenn Research Center, Cleveland, Ohio, July 15, 2008.
- “CFD Modeling of Film Cooling and Comparisons with Experimental Data,” Graduate seminar, The American University in Cairo, November 2008.
- “Gas turbine blade heat transfer,” Graduate seminar, The American University in Cairo, November 6, 2007.
- “Graduate studies for women engineers,” Panelist, Rensselaer Polytechnic Institute, 2005.

### **PATENTS**

- Method and Apparatus for Reducing Hot Spot Temperatures on Stacked Field Windings (U.S. Patent No 6956313) issued 2005.
- Method and Apparatus for Measuring Local Heat Transfer Distribution on a Surface (U.S. Patent No 6585408) issued 2003.

### **SCIENTIFIC & PROFESSIONAL SOCIETIES**

- Member, American Society of Mechanical Engineers (ASME)
- Member, ASME International Gas Turbine Institute Heat Transfer Committee
- Member, American Society for Engineering Education (ASEE)
- Treasurer/Secretary, ASEE Community Engagement Division
- Member, Board of Directors, International Society for Air Breathing Engines (ISABE).
- Member, American Institute of Aeronautics and Astronautics (AIAA)
- Member, Egyptian Engineers Syndicate

### **REVIEW ACTIVITY**

- Associate Editor, ASME Journal of Turbomachinery
- Book reviewer for Pearson Publishing “Advanced Fluid Mechanics, Seventh edition by Robert L. Mott and Joseph A. Untener”
- AIAA Journal of Thermophysics and Heat Transfer

- ASME Journal of Heat Transfer
- ASME Journal of Thermal Science and Engineering Applications
- ASME Journal of Turbomachinery
- European Journal of Engineering Education
- International Journal for Computational Methods in Engineering Science & Mechanics
- International Journal of Heat and Mass Transfer
- International Journal of Thermal Sciences
- International Journal of Turbomachinery, Propulsion and Power
- International Journal of Rotating Machinery
- Journal of Renewable and Sustainable Energy
- Journal of Power and Energy
- ASME International Gas Turbine Institute Turbo Exposition
- ASME International Mechanical Engineering Congress & Exposition (IMECE)
- ASME Gas Turbine India Conference
- AUC conference on engineering solutions for sustainable development

### **PROFESSIONAL SERVICE**

- PhD Committee External Examiner, KTH Energy Technology Department doctoral thesis “Methane in Rocket nozzle cooling channels – conjugate heat transfer measurements” 2022
- Chair, ASME International Gas Turbine Institute (IGTI) Education Committee
- Treasurer/Secretary of Community Engaged Division of the American Society for Engineering Education (ASEE)
- ASME IGTI Scholarship Evaluation Committee
- Chair, ASME IGTI Heat Transfer Honors and Awards Sub-Committee
- Session Moderator – Community Engaged Division technical session: STEM Outreach, ASEE 2022 Annual Conference, Minneapolis, Minnesota.
- Vanguard Chair – Education Committee, 2022 ASME Turbo Expo, Rotterdam, The Netherlands
- Session organizer and Moderator - Panel Session: Student Preparedness for Academic and Industry Careers, 2022 ASME Turbo Expo, Rotterdam, The Netherlands
- Session organizer and Chair – Heat transfer: Additive Manufacturing & Novel Turbulators, 2022 ASME Turbo Expo, Rotterdam, The Netherlands
- Session organizer and Chair – Heat transfer: Jet Impingement, 2022 ASME Turbo Expo, Rotterdam, The Netherlands

- Session organizer and Chair – Heat transfer: Shaped Film Cooling, 2022 ASME Turbo Expo, Rotterdam, The Netherlands
- Vanguard Chair – Heat Transfer: Film Cooling, 2021 ASME Turbo Expo, Pittsburgh
- Session organizer and Chair – Education: Technical developments and education issues, 2020 ASME Turbo Expo, London
- Session organizer and Chair – Heat transfer: Numerical film cooling, 2020 ASME Turbo Expo, London
- Session Co-chair – Heat Transfer: Internal heat transfer/additive manufacturing considerations, 2020 ASME Turbo Expo, London
- Session Co-chair – Heat Transfer: Conjugate heat transfer, 2020 ASME Turbo Expo, London
- Vanguard Chair – Heat Transfer: Experimental Film Cooling, 2019 ASME Turbo Expo, Phoenix
- Session organizer and Chair – Education: Education issues, 2019 ASME Turbo Expo, Phoenix
- Session organizer and Chair – Heat Transfer: General Computational Heat Transfer, 2019 ASME Turbo Expo, Phoenix
- Session Co-chair – Heat Transfer: Numerical Internal Cooling, 2019 ASME Turbo Expo, Phoenix
- Session Co-chair – Heat Transfer: Experimental Film Cooling, 2019 ASME Turbo Expo, Phoenix
- Vanguard Chair – Heat Transfer: Additive Manufacturing, 2018 ASME Turbo Expo, Oslo
- Session organizer & Chair – Experimental Film Cooling: Vane/Blade Film Cooling, 2018 ASME Turbo Expo, Oslo
- Session organizer and Chair – Numerical Film Cooling: Numerical Simulation of Effusion and Slot Film Cooling, 2017 ASME Turbo Expo, Charlotte
- Vanguard Chair – Heat Transfer: Experimental Internal Cooling, 2016 ASME Turbo Expo, Seoul
- Session organizer and Chair – Experimental Internal Cooling: Additive Manufacturing, 2016 ASME Turbo Expo, Seoul
- Organizing Committee Member, Twelfth International Conference of Fluid Dynamics, ICFD12, Dec 19-20, 2016, Cairo
- Vanguard Chair – Conjugate heat transfer, 2015 ASME Turbo Ext po, Montreal
- Session organizer and Chair – Film cooling Design, Modeling, and Analysis II, 2015 ASME Turbo Expo, Montreal
- Session organizer and Chair – General film cooling IV, 2014 ASME Turbo Expo, Dusseldorf
- Session organizer and Chair – Gas Turbine Heat Transfer, 2013 ASME International Mechanical Engineering Congress & Expo (IMECE), San Diego, CA
- Session organizer and Chair - Conjugate Heat Transfer IV, 2013 ASME Turbo Expo, San Antonio, TX
- Session organizer - Endwall Film Cooling, 2012 ASME Turbo Expo, Copenhagen

- Session organizer and Chair – Internal Effects on Film Cooling, 2011 ASME Turbo Expo, Vancouver, Canada
- Session Co-chair – Heat transfer in Turbulated Passages, 2011 ASME Turbo Expo, Vancouver, Canada
- Session chair – Biofuels and Combustion, 2011 GCREEDER Global Conference for Renewables and Energy Efficiency in Desert Regions, Amman, Jordan
- Session Co-chair – Numerical and Experimental Heat Transfer, 2010 ASME IMECE, Vancouver, Canada
- Session organizer – Endwall Film Cooling, 2009 ASME Turbo Expo, Orlando, Florida
- Co-chair, 2009 Africa / Middle East Renewable Energy Summit, Cairo, Egypt
- Moderator - Industrial Ecology and Natural Resources Conservation, 2009 AUC-EUR (Erasmus University) Sustainable Development Workshop
- Invited expert, Workshop on Energy Research – Identification of research topics of mutual interest to EU/MPC organized by the Mediterranean Innovation and Research Coordination Action (MIRA) Project and Research, Development and Innovation (RDI) Program – March 23-24, 2009 Cairo, Egypt.
- Session organizer and Chair – Novel Film Cooling CFD, 2008 ASME Turbo Expo, Berlin, Germany
- Technical Program Chair, 2006 AIAA/ASME joint Engineering Symposium, Albany, New York

## **SELECTED SERVICE**

### **UNIVERSITY**

- Women in STEM Leadership Council Mentor 2019-Present
- Faculty Advisor, Women in Aeronautics and Astronautics 2020 – Present
- Judge, Dobin Prize in Community-Engaged Independent Work 2022
- Undergraduate Research Grants Reviewer 2016-2017
- Center for Learning & Teaching, Faculty Associate 2015-2017
- Sustainable Campus Committee, Member 2010-2017
- AUC Faculty Services Committee, Member 2008-2017
- Faculty Senate, Senator Fall 2013
- University Academic Affairs Committee, Member Fall 2013
- AUC Press & Publications Committee, Member 2007-2010
- AUC Bus Transportation Committee, Member 2008-2013
- First Year Experience Freshman Orientation Instructor 2008-2013
- Faculty Mentor, International Student Affairs Office 2007-2008

### **SCHOOL**

- BSE First Year Advisor / Faculty Fellow, Whitman Residential College 2020 – Present
- School of Engineering and Applied Science STEM Teaching Group 2020 – Present
- School of Sciences & Engineering Academic Affairs Committee, Fall 2013
- Solar Decathlon Europe team faculty advisor 2009-2012
- School of Science & Engineering Retreat Planning Committee 2010

### **DEPARTMENT**

- Undergraduate Faculty Committee, Mechanical & Aerospace Engineering 2019-present
- Undergraduate Awards Committee, Mechanical & Aerospace Engineering 2020 - present
- Mechanical Engineering Club Faculty Advisor 2006-2017
- Student Advising 2007-2017
- Exemplary Student Selection Committee, Chair 2007-2017
- Shell Award Selection Committee Chair 2007-2012
- Graduate studies committee, Chair 2010



- ABET Accreditation Committee, Member 2009
- Engineering for the Petroleum and Process Industry (ENPPI) Summer Intern Coordinator 2009
- Faculty and graduate student grants screening committee 2009
- Departmental graduate studies committee, Member 2008
- Recruiting (Open house, lab tours, majors fair, poster/banner design) 2007-2011

## COMMUNITY SERVICE

- President, Princeton School District Special Education Parent Advisory Group May 2022 - Present
- VP Outreach, Riverside Elementary School PTO Fall 2021 – Spring 2022
- VP After-School Clubs, Riverside Elementary School PTO Fall 2019 – Spring 2022
- Science Day Organizer/Instructor, Riverside Elementary School Spring 2019 - Present
- Lead Instructor (Math015), East Jersey State Prison Spring 2020
- Judge, NSF Student Research Poster Competition, Salt Lake City 2019
- Instructor (Math015), Edna Mahan Correctional Facility for Women Summer 2019
- Lead Instructor (Math015), Wagner Youth Correctional Facility Spring 2019
- Lead Instructor (Math020), Garden State Youth Correctional Facility Fall 2018
- Lead Instructor (Math020), Wagner Youth Correctional Facility Spring 2018
- Riverside Elementary School PTO, Afterschool Clubs Organizer 2018-2019
- Egyptian Engineering Day Competition Judge 2016
- Bibliotheca Alexandria Planetarium & Science Center 2012-2017
- Nahdet El Mahrousa Young Innovators Award Judge/Evaluator 2009-2017
- Organizer, ASME Student Professional Development Conference 2014-2016
- Arab-Gulf Cooperation Council Countries Engineering Students Design Competition. 2013
- Stabl Antar Dream project, Sohbit Khair NGO partner 2009-2011
- Wadi Environmental Science Center NGO partner 2009-2010
- Samsung Real Dreams Award Judge 2009
- Global Wind Day Organizer (in partnership with Sewedy Wind Energy) 2009