Douglas Keller Jr.

907-342-2070 | dkeller12@alaska.edu

EDUCATION

University of Alaska, Fairbanks, *Fairbanks, AK*
Major: B.S./M.S. Mechanical Engineering
Undergraduate GPA: 3.83/4.0   *Graduate GPA:* 4.0/4.0
Graduation: Fall 2018

RESEARCH PROJECTS

Geophysical Institute, University of Alaska, Fairbanks, *Fairbanks, AK*
Using NASA MPLNET and radiosonde to determine the variability of the High Latitude Atmospheric Boundary Layer, *Fall 2017 – Present*

- Developing methods to determine Earth's atmospheric boundary layer height from Lidar backscatter
- Analyzing application of the methods to the high latitude atmospheric boundary layer compared to radiosonde data
- Statistically analyze the atmospheric boundary layer on daily time intervals
- Analyze the atmosphere boundary layer on spatial intervals with GPS radio occultation

College of Engineering and Mines, University of Alaska, Fairbanks, *Fairbanks, AK*
NASA Armstrong Flight Research Center, *Edwards Air Force Base, CA*
Using FOSS and Conventional Sensing Systems in high Electromagnetic Interference Environments, *Fall 2017 – Present*

- Using NASA Fiber Optic Sensing System (FOSS) and conventional strain gauge systems in high electromagnetic interference environments found in aviation
- Developed a load cell designed around the FOSS to measure thrust from an electric motor coupled with a 3-blade propeller to develop future electric propulsion systems
- Analyze and compare data retrieved using FOSS and conventional strain gauges
- Determined the effect of electromagnetic interference on the thrust loading measurements
- Determined the effect of mechanical interference/vibration with both systems in same application

WORK EXPERIENCE

NASA Armstrong Flight Research Center, *Edwards Air Force Base, CA*
Mechanical Engineering Intern, *Summer 2017*

- Tested thermodynamics of initial Fiber Optic Sensing System (FOSS) enclosure concept for Quiet Supersonic Technology (QueSST)
- Researched heat transfer technologies for FOSS enclosure flight testing application
- Analyzed heat transfer methods for FOSS enclosure application
- Designed prototype enclosure for FOSS components, utilizing research/analyzed methods

Alaska Department of Transportation, *Fairbanks, AK*
Engineering Intern, *Summer 2015*

- Measured state maintained pedestrian facilities
- Determined pedestrian facility requirements for American Disability Act compliance
- Compiled measurement data from multiple interns for coordinator review

PROGRAMMING LANGUAGES

MATLAB, Python, Julia, Fortran, C

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ENGINEERING PROJECTS

Geophysical Institute, University of Alaska, Fairbanks, *Fairbanks, AK*
Atmospheric Research Light Detection and Ranging (LIDAR) Project, *Fall 2016*
- Designed optical polarizer cube mount
- Designed telescope-optical board interface mount

Project Aisle, *Spokane, WA*
Golf Swing Replicator, *Summer 2016*
- Designed golf swing replicator in SolidWorks (adjustable stand, ball holder, swinging mechanism)
- Fabricated golf swing replicator (adjustable stand, ball holder, swinging mechanism)
- Tested and analyzed golf swing replicator

College of Engineering and Mines, University of Alaska, Fairbanks, *Fairbanks, AK*
Ice Arch Build, *Fall 2014 – Spring 2015*
- Member of construction team
- Assisted in wooden mold construction
- Assisted in formation of ice for arch design

CONFERENCE PROCEEDINGS

Fochesatto G. J., O. Galvez, P. Ristori, D. Keller and E. L. Fochesatto. "Lidar to Determine the Fractions of Ice, Liquid and Water Vapor in Polar Tropospheric Cloud." *Accepted for publication in the proceedings of the 28th International Laser Radar Conference,* Bucharest, Romania. 25-30 June 2017.

IN PROGRESS

D. Keller, D. R. Eagan, G. J. Fochesatto, R. Peterson. "Advantages of Fiber Bragg Gratings over Resistance-Based Strain Gauges in the Presence of Electromagnetic Interference Emitted from an Electric Motor for Aerospace Application."

D. Keller, G. J. Fochesatto. "A New Wavelet to Determine the Planetary Boundary Layer Height from Micro Pulse Lidar Backscatter."

HONORS AND AWARDS

Chancellor's List, *Spring 2017, Fall 2016, Spring 2016*
Dean's List, *Fall 2015, Spring 2015*
Alaska Space Grant Undergraduate Research Fellowship *Fall 2017 - Present*
Alaska Space Grant, *Summer 2017*
University of Alaska Scholars Award, *Fall 2014 – Spring 2018*
Alaska Performance Scholarship, *Fall 2014 – Spring 2018*
NACE International Alaska Section / BP Scholarship, *Fall 2016 – Spring 2017*
URSA Award, *Spring 2018*

OTHER INTERESTS

Programming, Optics, Aerospace, Artificial Intelligence, Quantum Communication, Game Development, Aviation, Music, Language Learning, Krav Maga, Hockey

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REFERENCES   Javier Fochesatto PhD, *Associate Professor of Atmospheric Sciences*
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Paul Bean, *Aerospace Technology Engineer*
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Cheng-fu Chen PhD, *Professor of Mechanical Engineering*
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