
JONAS GUSTAVSSON

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EDUCATION

PhD Aerospace Engineering

University of Florida, Gainesville, FL, Aug 2000 - May 2004

Dissertation: *Accuracy Investigation of Filtered Rayleigh Scattering for Velocity Measurements*

GPA: 3.85/4.00

MS Engineering Physics, specializing in Applied Mechanics

Royal Institute of Technology, Stockholm, Sweden, Sep 1992 - Oct 1998

Master's thesis: *Experiments on Turbulent Flow Separation*

BA English, specializing in the English Language

Stockholm University, Stockholm, Sweden, Sep 1992 - Oct 1996

Diploma Project: *Text Categorization Using Acquaintance* (A C++ implementation of an automatic text analysis method proposed by Marc Damashek)

EXPERIENCE

Assistant/Associate Research Scientist, Florida Center for Advanced Aero-Propulsion, July 2009-

Conducting and supervising research in high-speed flow facilities, including applying laser-based diagnostics to study flow control and noise suppression. Responsible for Hot Jet facility using ethylene combustion to simulate jet engine conditions and anechoic chamber for noise measurements. Using LDV and PDPA to characterize sprays.

Test Engineer, Unik Resurs/Siemens Industrial Turbomachinery, Sep 2008-June 2009

Carried out combustion and flow testing related to gas turbine development. Studied alternative fuel combustion in low NOx combustor. Applied IR thermography to study heat transfer and film cooling effectiveness on turbine vanes.

Postdoctoral Associate, University of Florida, May 2004-July 2008

Applied FT-IR to determine concentrations of intermediates and products as fluorinated polymers are decomposed and combusted under different conditions using Matlab for spectral analysis. Studied rich catalytic combustion using mass spectrometry and surveyed non-linear optics for application to two-photon CO fluorescence (LIF). Participated in supersonic combustor testing. Designed a test facility for investigation of cavitation in cryogenic materials using a new fluorescent fluoroketone as test fluid.

Lecturer, University of Florida, Jan 2006-May 2006

Taught a class of ~150 undergraduates Thermodynamics.

Research and Teaching Assistant, University of Florida, Aug 2000-May 2004

Carried out wind tunnel experiments on supersonic flow related to pulse detonation engines and scramjets. Employed filtered Rayleigh scattering, schlieren optics, thermocouples, photodiodes, intensified CCD cameras and pressure transducers for data acquisition. Responsible for test design, execution and evaluation as well as for report writing. TA duties included tutoring and grading assignments for undergraduate Dynamics.

Research Engineer, Aeronautical Research Institute of Sweden, Feb 1999-Aug 2000

Carried out several different wind-tunnel tests as a member of teams working on wind-power turbine projects and the development and testing of an improved cup anemometer. Primary responsibilities involved test execution, design iteration, evaluation and report writing.

Research and Teaching Assistant, Royal Institute of Technology, 1997-98

Supervised undergraduate students during fluids experiments and took part in wind-tunnel testing and reporting for an external client and as part of the Master's research. Learned and applied a large number of experimental techniques, including PIV, hot-wire anemometry and Preston tubes.

JOURNAL PUBLICATIONS

1. Vaidyanathan, A., Gustavsson, J., Segal, C., "One- and Three-Dimensional Wall Heat Flux Calculations in a O₂-H₂ System", *Journal of Propulsion and Power*, **26** (1), pp. 186-189, 2010
2. Gustavsson, J., Segal, C., Dorney, D., "Incipient Cavitation Studied under Strong Thermodynamic Effect", *AIAA Journal*, **47** (3), pp. 710-716, 2009
3. Vaidyanathan, A., Gustavsson, J., Segal, C., "Oxygen/Hydrogen-Planar-Laser-Induced Fluorescence Measurements and Accuracy Investigation in High-Pressure Combustion", *Journal of Propulsion and Power*, **25** (4), pp. 864-874, 2009
4. Gustavsson, J. P. R., Segal, C., "Hydrofoil Cavitation under Strong Thermodynamic Effect", *Journal of Fluids Engineering*, **130** (8), 091303, 2008
5. Gustavsson, J. P. R., Segal, C., "Fluorescence spectrum of 2-trifluoromethyl-1,1,1,2,4,4,5,5,5-nonafluoro-3-pentanone", *Applied Spectroscopy*, **61** (8), pp. 903-907, 2007
6. Gustavsson, J. P. R., Segal, C., "Combustion and thermal decomposition of fluorinated polymers", *Journal of Combustion Science and Technology*, **178** (12), pp. 2097-2114, 2006
7. Nori, V., Lerma, N., Gustavsson, J., Segal, C., Fernandez, R., "Forced Oscillations in a Mixed-Compression Inlet at Mach 3.5 for Pulse Detonation Engine Systems", *Journal of Fluids Engineering*, **128** (3), pp. 494-506, 2006
8. Gustavsson, J., Segal, C., "Filtered Rayleigh Scattering Velocimetry - Accuracy Investigation in a M=2.2 Axisymmetric Jet", *Experiments in Fluids*, **38**, pp. 11-20, 2005
9. Gustavsson, J., Nori, V., Segal, C., "Modeling of Air Intake and Engine Interaction in Axisymmetric Pulse Detonation Engine Systems", *AIAA Journal of Propulsion and Power*, Mar-Apr 2003

PUBLICATIONS UNDER REVIEW

Gustavsson, J. P. R., Ragaller, P. A., Freeborn-Scott, C. R., Kumar, R., Alvi, F. S., "Temperature Effect on Acoustics of Supersonic Impinging Jet", *AIAA Journal*, submitted Oct 2010

CONFERENCE PAPERS

1. Ragaller, P. A., Annaswamy, A. M., Gustavsson, J. P. R., Alvi, F. S., "Impinging Jet Noise Suppression using Water Microjets", AIAA 2011-913, *49th Aerospace Sciences Meeting*, Orlando, FL, Jan 4-7, 2011
2. Kinell, M., Gustavsson, J., Utriainen, E., Hylén, J., Bradley, A., Karlsson, M., Wren, J., "Fan Shaped and Cylindrical Holes Studied in Vane Film Cooling Test Rig", GT2010-23308, *ASME Turbo Expo*, Glasgow, UK, June 14-18, 2010
3. Gustavsson, J. P. R., Ragaller, P. A., Kumar, R., Alvi, F. S., "Temperature Effect on Acoustics of Supersonic Impinging Jet", AIAA 2010-3785, *16th AIAA/CEAS Aeroacoustics Conference*, Stockholm, Sweden, June 7-9, 2010
4. Gustavsson, J., Hylén, J., Kinell, M., Utriainen, E., "Window Temperature Impact on IR Thermography for Heat Transfer Measurements", AIAA 2010-0670, *48th AIAA Aerospace Sciences Meeting and Exhibit*, Orlando, FL, Jan 4-7, 2010
5. Solomon, J. T., Alvi, F. S., Kumar, R., Gustavsson, J., "Principles of a High- Bandwidth Microactuator Producing Supersonic Pulsed Microjets", AIAA 2010-1096, *48th AIAA Aerospace Sciences Meeting and Exhibit*, Orlando, FL, Jan 4-7, 2010
6. Ali, M., Solomon, J. T., Gustavsson, J., Kumar, R., Alvi, F. S., "Control of Resonant Flow inside a Supersonic Cavity Using High Bandwidth Micro-actuators", AIAA 2010-1198, *48th AIAA Aerospace Sciences Meeting and Exhibit*, Orlando, FL, Jan 4-7, 2010
7. Gustavsson, J. P. R., Denning, K., Segal, C., "Experimental study of Cryogenic Cavitation Using Fluoroketone", AIAA 2008-0576, *46th AIAA Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan 7-10, 2008
8. Gustavsson, J. P. R., Segal, C., "Characterization of a Perfluorinated Ketone for LIF Applications", AIAA 2008-0259, *46th AIAA Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan 7-10, 2008

9. Vaidyanathan, A., Gustavsson, J., Segal, C., "Heat Fluxes/OH-PLIF Measurements in a GO₂/GH₂ Single-Element Shear Injector", 2007-5591, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cincinnati, OH, July 8-11, 2007
10. Gustavsson, J. P. R., Lerma, N., Segal, C., "Combustion Characterization of Fluorinated Polymers", AIAA 2004-3883, 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Ft Lauderdale, FL, Jul 2004
11. Gustavsson, J., Segal, C., "Filtered Rayleigh Scattering Velocimetry - Accuracy Investigation in a M=2.22 Axisymmetric Jet", AIAA 2004-0012, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan 2004
12. Gustavsson, J., Segal, C., "Accuracy Assessment of Velocity Measurement Techniques via Filtered Rayleigh Scattering ", 7th International Symposium on Fluid Control, Measurement and Visualization, Sorrento, Italy, Aug 2003
13. (4 conference papers omitted)
16. Muhammad-Klingmann, G.B., Gustavsson, J., "Experiments on turbulent flow separation", 3rd ImechE European Conference on Turbomachinery, London, United Kingdom, 1999

PROFESSIONAL ACTIVITIES

- Served on 2 PhD supervisory committees
- Served as lecturer for undergraduate Thermodynamics
- Senior Member of AIAA
- Reviewer for *Journal of Propulsion and Power*, *AIAA Journal*, *Journal of Fluids Engineering* and *International Gas Turbine Institute*

REFERENCES

Available upon request

The online version of this CV (http://plaza.ufl.edu/jgu/public_html/resume/resume.html) includes links to several of my reports and papers.