

## PUBLICATIONS

### JOURNAL ARTICLES

1. Davis, T., Edstrand, A., **Alvi, F. S.**, Cattafesta, L. N., Yorita, D. and Asai, K., “Visualization of Impinging Jet Resonant Modes Using Pressure Sensitive Paint,” *Experiments in Fluids*, Volume 56, No 5, 2015.
2. Uzun, A., **Alvi, F. S.**, Colonius, T., and Hussaini, M. Y., “Spatial Stability Analysis of Subsonic Jets Modified for Low- Frequency Noise Reduction,” to appear in the *AIAA Journal*, summer/Fall 2015.
3. McNally, J., Fernandez, R., Robertson, G. Kumar, R., Taira, K., Alvi, F., Yamaguchi, Y. and Murayama, K. “Drag Reduction on Flat-Back Ground Vehicle with Active Flow Control,” to appear in the *Journal of Wind Engineering & Industrial Aerodynamics* (invited), summer/Fall 2015.
4. Kreth, P., Alvi, F. S., Reese, B. M., and Oates, W., "Control of High Frequency Microactuators using Active Structures," *Smart Materials and Structures*, [doi:10.1088/0964-1726/24/2/025030](https://doi.org/10.1088/0964-1726/24/2/025030)
5. Ali, M. Y., Ahmed, K. **Alvi, F. S.** and Kumar, R., “Flowfield Characteristics of Oblique Shocks Generated using Microjet Arrays,” to appear in the *International Journal of Flow Control*, accepted October 2014.
6. Emerick, T. Ali, M. Y., **Alvi, F. S.**, Popkin., S. H. and Cybyk, “SparkJet Characterizations in Quiescent and Supersonic Flowfields,” to appear in *Experiments in Fluids*, accepted November 2014.
7. Ahmed, K. Ali, M. Y. and **Alvi, F. S.**, “Mixing Characteristics of Active Microjet-Based Actuators in a Supersonic Backward-Facing Step Flow,” *AIAA Journal*, DOI: 10.2514/1.J053004.
8. Worden, T. J., Upadhyay, P., Gustavsson, J. P. and **Alvi, F. S.**, “Studies on Microjet Control Effectiveness in High-Temperature Supersonic Impinging Jets,” *AIAA Journal*, Vol. 52, No. 8, 2014, pp. 1757-1769. DOI: 10.2514/1.J052692.
9. Kreth, P. and **Alvi, F. S.**, “Microjet-Based Active Flow Control on a Fixed Wing UAV,” to appear in the *Journal of Flow Control, Measurement & Visualization*, Vol.2 No.2, April 2014.
10. Uzun, A., Foster, C. H., Solomon J., Oates, W. S., Hussaini M. Y. and **Alvi, F. S.** “Flow Physics of a Pulsed Actuator Generating Unsteady Microjets,” *AIAA Journal*, Vol. 51, No. 12, Dec. 2013, pp. 2894-2918.

11. Ali, M. Y. Kumar, R., *Alvi, F. S.*, Manisankar., C., Verma, S. B. and Venkatkrishnan, L., "Studies on the Control of Shock Wave-Boundary Layer Interaction Using Steady Microactuators," *AIAA Journal*, , Vol. 51, No. 12, Dec. 2013, pp. 2753-2762.
12. Kumar, R., Wiley, A., *Alvi, F. S.* and Venkatkrishnan, L."Role of Coherent Structures in Supersonic Impinging Jets," *Physics of Fluids*, Vol. 25, 076101, July 2013.
13. Uzun, A., Kumar, R., Hussaini M. Y. and *Alvi, F. S.* "Simulation of Tonal Noise Generation by Supersonic Impinging Jets," *AIAA Journal* Vol. 51, No. 7, July 2013, pp 1593-1611.
14. Fernandez, E., Kumar, R. and *Alvi, F. S.*, "Separation Control on a Low-Pressure Turbine Blade using Microjets," to appear in the *Journal of Propulsion & Power*, Vol. 29, No. 4, 2013, pp. 867-881.
15. Solomon, J., Foster, C. and *Alvi, F. S.* "Design and Characterization of High-bandwidth, Resonance Enhanced Pulsed Microactuators: A Parametric Study," *AIAA Journal*, Vol. 51, No. 2, Feb. 2013.
16. Hogue, J. M., Kumar, R., Oates, W. and *Alvi, F. S.*, "A Supersonic Broadband Microjet Actuator Using Piezohydraulic Actuation," *Journal of Intelligent Materials*, Vol. 23 Issue 17, November 2012.
17. Kumar, R., Ali, Y., *Alvi, F. S.* and Venkatkrishnan, L., "Generation and Control of Oblique Shocks Using Microjets," *AIAA Journal*, Vol. 49, No. 12, December 2011.
18. Kumar, V., Hays, M., Fernandez E., Oates, W. and *Alvi, F. S.*, "Flow Sensory Actuators for Micro Air Vehicles," *Smart Mater. Structures*, Vol. 20, September 2011, [doi:10.1088/0964-1726/20/10/105033](https://doi.org/10.1088/0964-1726/20/10/105033)
19. Aubrun, S., McNally, J., *Alvi, F. S.* and Kourta A., "Separation Flow Control on A Generic Ground Vehicle Using Steady Microjet Arrays," *Experiments in Fluids*, Vol. 51, Issue 5, 2011, pp.1177-1187.
20. Venkatkrishnan, L., Wiley, A., Kumar, R. and *Alvi, F. S.*, "Density Field Measurements of a Supersonic Impinging Jet with Microjet Control," *AIAA Journal*, Vol. 49, No. 2, February 2011, pp. 432-438.
21. Solomon, J., Kumar, R. and *Alvi, F. S.* "High Bandwidth Pulsed Microactuators for High Speed Flow Control," *AIAA Journal* , Vol. 48, No. 10, pp. 2386-2396, October 2010.
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23. Kumar, R., Lazic, S. and *Alvi, F. S.*, "Control Of High Temperature Supersonic Impinging Jets Using Microjets," *AIAA Journal* , Vol. 47, No. 12, pp. 2800-2811, December 2009

24. Kumar, V. and **Alvi, F. S.**, “Towards Understanding and Optimizing Separation Control Using Microjets,” *AIAA Journal* , Vol. 47, No. 11, pp. 2544-2557, November 2009.
25. Arunajatesan, S., Kannepali, C., Sinha, N., Sheehan, M., **Alvi, F. S.**, Shumway, G. and Ukeiley, L., “Suppression of Cavity Loads Using Leading Edge Blowing,” *AIAA Journal*, DOI: 10.2514/1.38211, 2009.
26. **Alvi, F. S.**, H. Lou, C., Shih, C and R. Kumar., “Experimental study of physical mechanisms in the control of supersonic impinging jets using microjets,” *Journal of Fluid Mechanics*, vol. 613, 2008, pp. 55-83, 2008.
27. Siau, W. L., Bonnet, J. P., Tensi, J., Seifert, A., Stalnov, O., Kumar, V., **Alvi, F. S.**, Atkinson, C. H., Trevor, S., Gomes, L. D . “Collaborative studies on flow separation control *IUTAM Symposium on Flow Control and MEMS*, [IUTAM Bookseries](#), Vol. 7, pp. 157-166 Editors: Morrison, J. F.; Birch, D. M.; Lavoie, P., DOI: 10.1007/978-1-4020-6858-4\_18 , 2008
28. Ukeiley, L. Sheehan, M., Coiffet, F., **Alvi, F. S.**, Arunajatesan, S. and Jansen, B., “Control of Pressure Loads in Geometrically Complex Cavities,” *Journal of Aircraft*, **45**, No. 3., 2008, 1014-1024.
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30. Phalnikar, K., Kumar, K. and **Alvi, F. S.** “Experiments on free and impinging supersonic microjets,” *Experiments in Fluids*, **44**, No.5, 2008, 819-830.
31. Annaswamy, A., Choi, J. and **Alvi, F. S.**, “Pulsed Microjet Control of Supersonic Impinging Jets: via Low Frequency Excitation,” *Proc. IMechE, Part I: J. Systems and Control Engineering* 2008 (Special Issue), **222**(15), 279-296. [DOI: 10.1243/09596518JSCE517]
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34. Zhuang, N. **Alvi, F. S.**, Alkilsar, M. and Shih, C., “Aeroacoustic Properties of Supersonic Cavity Flows and Their Control,” *AIAA Journal*, vol. 44, No. 9, Sept. 2006, pp. 2118-2128.
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## CONFERENCE PAPERS & PROCEEDINGS

1. Valentich, G., Davis, T. Kumar, R., *Alvi, F.*, Alphonso, M. and Harris, C. “Characterization of a Supersonic Rectangular Jet Over a Range of Test Conditions,” AIAA Science and Technology Forum and Exposition (SciTech 2015) Orlando, January 2015.
2. Arora, N., Ali, M. Y. and *Alvi, F. S.*, “Shock-Boundary Layer Interaction due to a Sharp Unswept Fin in a Mach 2 Flow,” AIAA Science and Technology Forum and Exposition (SciTech 2015) Orlando, January 2015.
3. McNally, J., *Alvi, F. S.*, Mazellier, N. and Kourta, A., “Active Flow control on an Ahmed body – An experimental study,” AIAA Science and Technology Forum and Exposition (SciTech 2015) Orlando, January 2015.
4. Upadhyay, P., Davis, T. and *Alvi, F.*, “Active Control of Mach 0.9 Jet Using High Frequency Excitation,” AIAA Science and Technology Forum and Exposition (SciTech 2015) Orlando, January 2015.
5. McNally, J., Robertson, G. Kumar, R., *Alvi, F.*, Yamaguchi, Y., Murayama, K. and Teramura, M. “Drag Reduction on Flat-Back Ground Vehicle with Active Flow Control: Part II. Experiment,” First international conference in numerical and experimental aerodynamics of road vehicles and trains (Aerovehicles 1), Bordeaux, France, June 2014.
6. McNally, J., *Alvi, F. S.*, Mazellier, N. and Kourta, A., “Experimental Analysis of Active Flow Control Devices for Wake Modification on a Simplified Ground Vehicle Model,” 1<sup>st</sup> International Conference in Numerical and Experimental Aerodynamics of Road Vehicles and Trains (Aerovehicles 1), Bordeaux, France, June 2014.
7. Reese, B. M., Collins, E. G. and *Alvi, F. S.*, “A Nonlinear Adaptive Method for Microjet-Based Flow Separation Control,” 44th AIAA Fluid Dynamics Conference and Exhibit, Atlanta, June 2014
8. Fernandez, E. and *Alvi, F. S.*, “Vorticity Dynamics of Microjet Arrays for Active Control,” AIAA Science and Technology Forum and Exposition, Maryland, Jan. 2014.
9. Davis, T, Edstrand, A., Cattafesta, L. N., *Alvi, F. S.*, Yorita, D. and Asai, K. “Investigation of the Instabilities of Supersonic Impinging Jets Using Unsteady Pressure Sensitive Paint,” AIAA Paper 2014-0881, AIAA Science and Technology Forum and Exposition, Maryland, Jan. 2014.
10. Ali, M. Y. and *Alvi, F. S.*, “Three – dimensional Flowfield of Microjets in Supersonic Crossflow,” 43rd AIAA Fluid Dynamics Conference and Exhibit, San Diego, June 2013.
11. Upadhyay, P., Gustavsson, J. and *Alvi, F.*, “Ultra-High-Frequency Actuators for Jet Noise Control,” 43rd AIAA Fluid Dynamics Conference and Exhibit, San Diego, June 2013.

12. Worden. T., Gustavsson, J., Shih, C. and *Alvi, F.*, “High-Temperature Supersonic Normal and Oblique Impinging Jets,” 19th AIAA/CEAS Aeroacoustics Conference, Berlin, Germany, May 2013.
13. Worden. T., Upadhyay, P., Gustavsson, J. and *Alvi, F.*, “Studies on Microjet Control Effectiveness on High-Temperature Supersonic Impinging Jets,” 51<sup>st</sup>, AIAA Aerospace Meeting and Exhibit, Grapevine TX, Jan. 2013.
14. Popkin, S. H. , Cybyk, B. Z., Land III, H. B., Emerick,, T., Ali, M., Foster C., *Alvi, F.*, “Recent Performance-Based Advances in SparkJet Actuator Design for Supersonic Flow Applications,” AIAA Paper 2013-0322, 51<sup>st</sup>, AIAA Aerospace Meeting and Exhibit, Grapevine TX, Jan. 2013.
15. Reese, B., *Alvi, F.* and Collins, E., “Development of an Improved Performance Function for the Control of Flow Separation,” 51<sup>st</sup>, AIAA Aerospace Meeting and Exhibit, Grapevine TX, Jan. 2013.
16. Topolski, M., Arora, N. Ali, M. Solomon, J. and *Alvi, F.*, “Experiments on Resonance Enhanced Pulsed Microjet Actuators in Supersonic Crossflow,” 6th AIAA Flow Control Conference, New Orleans, June 2012.
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18. McNally, J., Fernandez, E., Kumar, R. and *Alvi, F.*, “A Generic Automotive Aftbody Separation Control Using Microjets,” AIAA Paper 2012-3041, 6th AIAA Flow Control Conference, New Orleans, June 2012.
19. *Alvi, F.* and Solomon, J., “Actuators for the Control of High-Speed Flows: An Overview and Update,” Invited Talk at the 6th AIAA Flow Control Conference, New Orleans, June 2012.
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21. Kreth, P., K Solomon, J. and *Alvi, F.*, “Studies on the Resonance-Enhanced Micro-Actuator with Active Structures,” AIAA Paper 2012-3240, 6th AIAA Flow Control Conference, New Orleans, June 2012.
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27. S. Haack, T. Taylor, B. Cybyk, Foster, *F. Alvi*, “Experimental Estimation of Spark-Jet Efficiency,” AIAA Paper 2011-3997, 41st AIAA Fluid Dynamics Conference and Exhibit, June 2011.
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31. P. Ragaller, J. Gustavsson; R. Kumar and *F. Alvi*, “Impinging Jet Noise Suppression Using Water Microjets,” 49th AIAA Aerospace Meeting and Exhibit, Orlando, Jan. 2011.
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34. Kumar, R., Venkatkrishnan, L., Wiley, A. and *Alvi, F. S.*, “Role of Coherent Structures in Supersonic Impinging Jet Noise and Its Control,” 16<sup>th</sup> AIAA Aeroacoustic Conference and Exhibit, June 2010, Stockholm, Sweden.
35. Gustavsson, J., Ragaller, P., Kumar, R. and *Alvi, F. S.*, “Aeroacoustics of Impinging Jets at Very High Temperatures, 16<sup>th</sup> AIAA Aeroacoustic Conference and Exhibit, June 2010, Stockholm, Sweden.

36. Aubrun, Sandrine, *Alvi, F. S.* and Kourta, Azeddine, “Active Flow Control of a 3D Separation on a Generic Ground Vehicle Using Steady Microjet Arrays,” 5th AIAA Flow Control Conference, Chicago, June 2010.
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53. Ukeiley, L. Sheehan, M., Coiffet, F., **Alvi, F.S.** , Arunajatesan, S., Jansen, “Control of Complex Cavity Configurations,” AIAA Paper 2007-1238, 2007.
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61. Sahoo, D., Annaswamy, A. and **Alvi, F. S.** , “Microjets-Based Active Control of Store Trajectory in a Supersonic Cavity Using a Low-Order Model,” AIAA Paper 2005-3097, presented at the 43rd AIAA Aerospace Meeting and Exhibit, Reno, Nevada, 10-13 January, 2005.
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65. **Alvi, F. S.**, C. Shih and Krothapalli, A. “Some Examples of Active Flow Control Using Microjets,” Presented at the International Symposium on Recent Advances in Aeroacoustics and Active Flow-Combustion Control, Goa, January 4-6, 2005 (*invited*)
66. Sahoo, D., Annaswamy, A. M., Zhuang, N., and **Alvi, F. S.**, “Control of Cavity Tones in Supersonic Flow,” AIAA 2005-0793, presented at the 43rd AIAA Aerospace Meeting and Exhibit, Reno, Nevada, 10-13 January, 2005.
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