Zhongwang Dou

Postdoctoral Research Associate, School of Mechanical Engineering, Purdue University

EDUCATION

- University at Buffalo — Buffalo, NY, USA
  Ph.D. in Mechanical Engineering — Aug. 2012 - Jan. 2017
- University of Science and Technology of China (USTC) — Hefei, Anhui, China
  B.Eng. in Thermal Science and Energy Engineering — Aug. 2008 - July 2012

RESEARCH EXPERIENCE

Postdoctoral Research Associate at Vlachos Research Group, Purdue University
Advisor: Professor Pavlos Vlachos — Oct. 2018 - Present
Autoinjector; Closed system drug-transfer device; Hazardous drug handling;

Postdoctoral Fellow at Flow Physics & Simulation Lab, Johns Hopkins University
Advisor: Professor Rajat Mittal — June 2017 - Sep. 2018
Heart valve leaflet; Simulation Verification; Mosquito-Borne Diseases

Research Scientist at Canon Stroke & Vascular Research Center, University at Buffalo
Advisor: Professor Hui Meng — Apr. 2017 - June 2017
Aneurysm Hemodynamics; Flow Diverter; Medical Device

Research Assistant at Laser Flow Diagnostics Lab, University at Buffalo
Advisor: Professor Hui Meng — Aug. 2012 - Feb. 2017
Particle-laden Flow; Particle Tracking Velocimetry; Isotropic Turbulence

PUBLICATIONS

Journal Publication

[J1] **Dou, Z.**, Eshraghi, J. Guo, T., Veilleux, J.C., Duffy, K. Shi, G. Collins, D. Ardekani, A. Vlachos, P. (2020) Performance characterization of spring actuated autoinjector devices for Emgality and Aimovig, ***Current Medical Research and Opinion,*** 1473-4877. https://doi.org/10.1080/03007995.2020.1783219

[J2] **Dou, Z.**, Madan, A., Spoleti, T., Chung, J., Cammarato, A., Mittal, R. (2020) Acoustotactic Response of Mosquitoes in Untethered Flight to High Intensity Sound. ***Scientific Reports*** (accepted)

[J3] **Dou, Z.**, Rips, A., Jacob, L., & Mittal, R. (2019). Experimental characterization of the flow-induced flutter of a suspended elastic membrane. ***AIAA Journal***, 1-10. https://doi.org/10.2514/1.J058600

[J4] **Dou, Z.**, Bragg, A. D., Hammond, A. L., Liang, Z., Collins, L. R., & Meng, H. (2018). Effects of Reynolds number and Stokes number on particle-pair relative velocity in isotropic turbulence: a systematic experimental study. ***Journal of Fluid Mechanics***, 839, 271-292. https://doi.org/10.1017/jfm.2017.813

[J5] **Dou, Z.**, Ireland, P. J., Bragg, A. D., Liang, Z., Collins, L. R., & Meng, H. (2018). Particle-pair relative velocity measurement in high-Reynolds-number homogeneous and

isotropic turbulence using 4-frame particle tracking velocimetry. ***Experiments in Fluids***, 59(2), 30. https://doi.org/10.1007/s00348-017-2481-0

[J6] **Dou, Z.**, Pecenak, Z. K., Cao, L., Woodward, S. H., Liang, Z., & Meng, H. (2016). PIV measurement of high-Reynolds-number homogeneous and isotropic turbulence in an enclosed flow apparatus with fan agitation. ***Measurement Science and Technology***, 27(3), 035305. http://dx.doi.org/10.1088/0957-0233/27/3/035305

[J7] Paliwal, N., Damiano, R. J., Varble, N. A., Tutino, V. M., **Dou, Z.**, Siddiqui, A. H., & Meng, H. (2017). Methodology for computational fluid dynamic validation for medical use: application to intracranial aneurysm. ***Journal of biomechanical engineering***, 139(12), 121004. https://doi.org/10.1115/1.4037792

[J8] Zhang, Y., Han, D., **Dou, Z.**,Veilleux, JC., Shi, G. H., Collins, D. S., Vlachos, P., Ardekani, A. M., (2020) The interface motion and hydrodynamic shear of the liquid slosh in syringes, ***Pharmaceutical Research***, (accepted)

Conference Proceeding

[C1] **Dou, Z.**, Rips, A., Jacob, L., Welsh, N., Seo, J. H., & Mittal, R. (2018). Flow-induced flutter of hanging banners: a configuration for validation of computational models. ***2018 AIAA Aviation, Fluid Dynamics Conference*** (p. 3081). https://doi.org/10.2514/6.2018-3081

[C2] Feng, Z., **Dou, Z.**, Wang, J., Ma, S. Zhang, Z. (2012). Numerical investigations of cooling enhancement with internal ribs and external coolant film. ***ASME Turbo Expo 2012: Turbine Technical Conference and Exposition*** (pp. 243-253). https://doi.org/10.1115/GT2012-68682

Conference Abstract (oral presentation)

[O1] **Dou, Z.**, Javad Eshraghi, J., Ardekani A., Vlachos, P. (2020). The role of contact angle on sloshing and air entrainment in a confined domain. Oral Presentation, 73th ***APS DFD***. https://meetings.aps.org/Meeting/DFD20/Session/X05.6

[O2] **Dou, Z.**, Vlachos, P. (2019). Measurement of mosquito wake flow using time-resolved tomographic particle image velocimetry. Oral Presentation, 72th ***APS DFD***. http://meetings.aps.org/Meeting/DFD19/Session/G27.2

[O3] **Dou, Z.**, Seo, J.H., Mittal, R. (2017). Flow-induced flutter of heart valves: experiments with canonical model. Oral Presentation, 70th ***APS DFD***. https://ui.adsabs.harvard.edu/abs/2017APS..DFD.D4007D/abstract

[O4] **Dou, Z.**, Bragg, A., Hammond, A., Liang, Z., Collins, L., & Meng, H. (2016). Effects of Reynolds number and Stokes number on particle-pair relative velocity in isotropic turbulence. Oral Presentation, 69th ***APS DFD***. https://ui.adsabs.harvard.edu/abs/2016APS..DFDA28003D/abstract

[O5] **Dou, Z.**, Pecenak, Z., Liang, Z., Cao, L., Ireland, P., Collins, L., & Meng, H. (2015). Inertial particle relative velocity in a high-Reynolds-Number homogeneous and isotropic turbulence chamber. Oral Presentation, 68th ***APS DFD***. https://ui.adsabs.harvard.edu/abs/2015APS..DFD.G3001D/abstract