

Stanford



Kazuki Maeda

Physical Sci Res Scientist
Mechanical Engineering

Bio

BIO

Maeda's research combines high-performance computing, modeling, data analysis, control, and companion experiments to address complex flow phenomena. He actively works on biomedical, energy, and propulsion applications, and on interdisciplinary research.

His current major research and teaching activities are conducted in the Center for Turbulence Research (<https://ctr.stanford.edu>) and the Predictive Science Academic Alliance Program Center (<https://insieme.stanford.edu>).

Maeda obtained his BS from the University of Tokyo in 2013, and MS and PhD from Caltech in 2014 and 2018, all in Mechanical Engineering. He was a postdoctoral fellow in the Center for Turbulence Research from 2019 to 2020.

ACADEMIC APPOINTMENTS

- Phys Sci Res Assoc, Mechanical Engineering

ADMINISTRATIVE APPOINTMENTS

- Research Associate, Center for Turbulence Research, Stanford University, (2020- present)
- Postdoctoral Fellow, Center for Turbulence Research, Stanford University, (2019-2020)

HONORS AND AWARDS

- Center for Turbulence Research Postdoctoral Fellowship, Stanford University (2019)
- Richard Bruce Chapman Memorial Award, California Institute of Technology (2018)
- Funai Overseas Scholarship Award, Funai Foundation for Information Technology (2013 - 2018)

PROFESSIONAL EDUCATION

- Ph.D., California Institute of Technology , Mechanical Engineering (2018)
- M.S., California Institute of Technology , Mechanical Engineering (2014)
- B.S., The University of Tokyo , Mechanical Engineering (2013)

PATENTS

- Shoji Takeuchi, Hiroaki Onoe, Masahiro Takinoue, Kazuki Maeda, Kiichi Inamori. "Japan Patent JP5830253B2 Apparatus and method of gelling liquid", Dec 9, 2015

LINKS

- Research website: <http://kazukimaeda.com>

Teaching

COURSES

2020-21

- Linear Algebra with Application to Engineering Computations: CME 200, ME 300A (Aut)
- Partial Differential Equations in Engineering: ME 300B (Win)

Publications

PUBLICATIONS

- **MFC: An open-source high-order multi-component, multi-phase, and multi-scale compressible flow solver.** *Computer physics communications*
Bryngelson, S. H., Schmidmayer, K., Coralic, V., Meng, J. C., Maeda, K., Colonius, T.
2021; 266
- **Viscid-inviscid interactions of pairwise bubbles in a turbulent channel flow and their implications for bubble clustering** *JOURNAL OF FLUID MECHANICS*
Maeda, K., Date, M., Sugiyama, K., Takagi, S., Matsumoto, Y.
2021; 919
- **Controlling the dynamics of cloud cavitation bubbles through acoustic feedback** *Physical Review Applied*
Maeda, K., Maxwell, A. D.
2021; 15:034033
- **Analysis of core-noise contributions in a realistic gas-turbine combustor operated near lean blow-out** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Shao, C., Maeda, K., Ihme, M.
2021; 38 (4): 6203-6211
- **Robust flow reconstruction from limited measurements via sparse representation** *PHYSICAL REVIEW FLUIDS*
Callahan, J., Maeda, K., Brunton, S. L.
2019; 4 (10)
- **Bubble cloud dynamics in an ultrasound field** *JOURNAL OF FLUID MECHANICS*
Maeda, K., Colonius, T.
2019; 862: 1105–34
- **High-speed video microscopy and numerical modeling of bubble dynamics near a surface of urinary stone.** *The Journal of the Acoustical Society of America*
Pishchalnikov, Y. A., Behnke-Parks, W. M., Schmidmayer, K. n., Maeda, K. n., Colonius, T. n., Kenny, T. W., Laser, D. J.
2019; 146 (1): 516
- **Modeling and numerical simulation of the bubble cloud dynamics in an ultrasound field for burst wave lithotripsy.** *Proceedings of meetings on acoustics. Acoustical Society of America*
Maeda, K., Colonius, T., Maxwell, A., Kreider, W., Bailey, M.
2018; 35 (1)
- **Energy shielding by cavitation bubble clouds in burst wave lithotripsy** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*
Maeda, K., Maxwell, A. D., Colonius, T., Kreider, W., Bailey, M. R.
2018; 144 (5): 2952–61
- **Eulerian -Lagrangian method for simulation of cloud cavitation** *JOURNAL OF COMPUTATIONAL PHYSICS*
Maeda, K., Colonius, T.
2018; 371: 994–1017
- **Transient Cavitation in Pre-Filled Syringes During Autoinjector Actuation** *10th International Symposium on Cavitation (CAV2018)*

Veilleux, J., Maeda, K., Colonius, T., Shepherd, J. E.
2018

- **Experimental observations and numerical modeling of lipid-shell microbubbles with calcium-adhering moieties for minimally-invasive treatment of urinary stones.** *Proceedings of meetings on acoustics. Acoustical Society of America*
Pishchalnikov, Y. A., Behnke-Parks, W. n., Maeda, K. n., Colonius, T. n., Mellema, M. n., Hopcroft, M. n., Luong, A. n., Wiener, S. n., Stoller, M. L., Kenny, T. n., Laser, D. J.
2018; 35 (1)
- **An Equation of State Tabulation Approach for Injectors with Non-Condensable Gases: Development and Analysis** *10th International Symposium on Cavitation (CAV2018)*
Bode, M., Satcunanathan, S., Maeda, K., Colonius, T., Pitsch, H.
2018
- **A source term approach for generation of one-way acoustic waves in the Euler and Navier-Stokes equations** *WAVE MOTION*
Maeda, K., Colonius, T.
2017; 75: 36–49
- **Observation and Manipulation of a Capillary Jet in a Centrifuge-Based Droplet Shooting Device** *MICROMACHINES*
Maeda, K., Onoe, H., Takinoue, M., Takeuchi, S.
2015; 6 (10): 1526–33
- **Modeling and experimental analysis of acoustic cavitation bubbles for Burst Wave Lithotripsy**
Maeda, K., Kreider, W., Maxwell, A., Cunitz, B., Colonius, T., Bailey, M., IOP
IOP PUBLISHING LTD.2015
- **Controlled Synthesis of 3D Multi-Compartmental Particles with Centrifuge-Based Microdroplet Formation from a Multi-Barrelled Capillary** *ADVANCED MATERIALS*
Maeda, K., Onoe, H., Takinoue, M., Takeuchi, S.
2012; 24 (10): 1340–46