

## PUBLICATIONS

### Johannes Baumgart

Website: [johannes-baumgart.eu/research/](http://johannes-baumgart.eu/research/)  
Orcid profile 0000-0001-7384-5715  
Reseracherid A-8547-2011  
Scopus 24480367900  
Google scholar  
Research gate

#### Scientific journals

- [1] J. Baumgart, C. Fritzsche, and S. Marburg. Infrasound of a wind turbine reanalyzed as power spectrum and power spectral density. *Journal of Sound and Vibration*, page 116310, 2021. URL: <https://doi.org/10.1016/j.jsv.2021.116310>.
- [2] J. Baumgart, M. Kirchner, S. Redemann, A. Bond, J. Woodruff, J.-M. Verbavatz, F. Julicher, T. Muller-Reichert, A. A. Hyman, and J. Bruges. Soluble tubulin is significantly enriched at mitotic centrosomes. *The Journal of Cell Biology*, 218(12):3977–3985, 2019. doi:10.1083/jcb.201902069.
- [3] J. Baumgart, S. Marburg, and S. Schneider. Efficient sound power computation of open structures with infinite/finite elements and by means of the pade-via-lanczos algorithm. *Journal of Computational Acoustics*, 15(4):557–577, 2007. URL: <http://dx.doi.org/10.1142/S0218396X07003494>.
- [4] T. Grothe and J. Baumgart. Assessment of bassoon tuning quality from measurements under playing conditions. *Acta Acustica united with Acustica*, 101(2):238–245, 2015. URL: <http://dx.doi.org/10.3813/AAA.918822>.
- [5] T. Grothe, J. Baumgart, and C. Nederveen. A transfer matrix for the input impedance of weakly tapered, dissipative cones as of wind instruments (I). *The Journal of the Acoustical Society of America*, 154(1):463–466, 2023. URL: <https://doi.org/10.1121/10.0020270>.
- [6] R. Grundmann, J. Baumgart, A. Richter, and H. Kruger. Contribution of fluid dynamics to woodwind instruments investigations of timbre and pitch

- of bassoon vocals. *Journal of Thermal Science*, 14(3):264–266, 2005. URL: <http://dx.doi.org/10.1007/s11630-005-0012-4>.
- [7] A. Kozlov, J. Baumgart, T. Risler, C. Versteegh, and A. Hudspeth. The balance of forces between clustered stereocilia minimizes viscous friction in the ear on a subnanometre scale. *Nature*, 474(7351):376–379, 2011. URL: <http://dx.doi.org/10.1038/nature10073>.
- [8] G. Ni, S. J. Elliott, and J. Baumgart. Finite-element model of the active organ of corti. *Journal of The Royal Society Interface*, 13(115), 2016. URL: <http://dx.doi.org/10.1098/rsif.2015.0913>.
- [9] A. A. Poznyakovskiy, T. Zahnert, Y. Kalaidzidis, R. Schmidt, B. Fischer, J. Baumgart, and Y. M. Yarin. The creation of geometric three-dimensional models of the inner ear based on micro computer tomography data. *Hearing Research*, 243(1-2):95–104, 2008. URL: <http://dx.doi.org/10.1016/j.heares.2008.06.008>.
- [10] S. B. Reber, J. Baumgart, P. O. Widlund, A. Pozniakovsky, J. Howard, A. A. Hyman, and F. Julicher. XMAP215 activity sets spindle length by controlling the total mass of spindle microtubules. *Nature Cell Biology*, 15(9):1116–1122, 2013. URL: <http://dx.doi.org/10.1038/ncb2834>.
- [11] S. Redemann, J. Baumgart, N. Lindow, M. Shelley, E. Nazockdast, A. Kratz, S. Prohaska, J. Bragues, S. Furthauer, and T. Muller-Reichert. *C. elegans* chromosomes connect to centrosomes by anchoring into the spindle network. *Nature Communications*, 8:15288, 2017. URL: <http://dx.doi.org/10.1038/ncomms15288>.
- [12] Y. M. Yarin, A. N. Lukashkin, A. A. Poznyakovskiy, H. Meissner, M. Fleischer, J. Baumgart, C. Richter, E. Kuhlisch, and T. Zahnert. Tonotopic morphometry of the lamina reticularis of the guinea pig cochlea with associated microstructures and related mechanical implications. *J Assoc Res Otolaryngol*, 15:1–11, 2013. URL: <http://dx.doi.org/10.1007/s10162-013-0420-1>.
- [13] D. Zwicker, J. Baumgart, S. Redemann, T. Muller-Reichert, A. A. Hyman, and F. Julicher. Positioning of particles in active droplets. *Phys. Rev. Lett.*, 121:158102, 2018. URL: <https://link.aps.org/doi/10.1103/PhysRevLett.121.158102>, doi:10.1103/PhysRevLett.121.158102.

### In proceedings

- [14] J. Baumgart, C. Chiaradia, M. Fleischer, Y. Yarin, R. Grundmann, and A. Gummer. Fluid mechanics in the subtektorial space. In N. Cooper and D. Kemp, editors, *Concepts and Challenges in the Biophysics of Hearing*, pages 288–293, New Jersey, London, Singapore, Beijing, Shanghai, Hong Kong, Taipei, Chennai, 2009. World Scientific Press. Proceedings of the 10th International Workshop on the Mechanics of Hearing. URL: [http://dx.doi.org/10.1142/9789812833785\\_0045](http://dx.doi.org/10.1142/9789812833785_0045).
- [15] J. Baumgart, A. Kozlov, T. Risler, and A. Hudspeth. Damping properties of the hair bundle. In C. A. Shera and E. S. Olson, editors, *Proceedings of the 11th International Workshop on the Mechanics of Hearing*, volume 11, pages 17–22, Williamstown, Massachusetts, 2011. URL: <http://dx.doi.org/10.1063/1.3658053>.
- [16] J. Baumgart, T. Leicht, T. Magin, P. Barbante, P. Rini, G. Degrez, and R. Grundmann. Calculation of transport properties for entry into the martian atmosphere. In H. Deconnick and E. Dick, editors, *Computational Fluid Dynamics 2006*, Computational Fluid Dynamics, pages 677–682. Springer, 2006.
- [17] G. Ni, S. J. Elliott, and J. Baumgart. Modelling motions within the organ of corti. In *Proceedings of the 11th International Workshop on the Mechanics of Hearing*, At Cape Sounio, Greece, 2014. URL: <http://dx.doi.org/10.1063/1.4939350>.

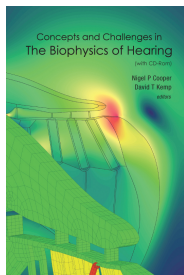
### Others

- [18] J. Baumgart. Von der Strömung zum Druck - Schall von Windenergieanlagen. *Akustik Journal*, 2:23–40, 2020. URL: [https://www.dega-akustik.de/fileadmin/dega-akustik.de/publikationen/akustik-journal/20-02/akustik\\_journal\\_2020\\_02\\_online\\_artikel2.pdf](https://www.dega-akustik.de/fileadmin/dega-akustik.de/publikationen/akustik-journal/20-02/akustik_journal_2020_02_online_artikel2.pdf).
- [19] J. Baumgart and B. M. Friedrich. Fluid dynamics: Swimming across scales. *Nature Physics*, 10 (News and Views):711–712, 2014. URL: <http://dx.doi.org/10.1038/nphys3099>.
- [20] J. Baumgart, T. Spielvogel, and S. Warmuth. Einzelfallgerechtigkeit - ein Konzept für eine situationsbezogene Irrelevanzprüfung am Beispiel von Windenergieanlagen. *Lärmbekämpfung*, 15(5):150–155, 2020. URL: <https://johannes-baumgart.eu/research/wp-content/>

uploads/sites/3/Baumgart%20et%20al.%20-%202020%20-%20Einzelfallgerechtigkeit%20-%20ein%20Konzept%20f%C3%BCr%20eine%20sit.pdf.

- [21] T. Grothe and J. Baumgart. Verfahren und Vorrichtung zur Impedanzmessung bei Blasinstrumenten. *Patent*, 25.3.(DE 102019008203), 2021.
- [22] G. Wolf, B. Eppelsheim, T. Grothe, and J. Baumgart. Holzblasinstrument. *Patent*, 19.9.(DE 102012006123 A1), 2013.

### Covers



Proceedings of the 10th International Workshop on the Mechanics of Hearing, World Scientific Press, 2009.

Illustration: Johannes Baumgart



Nature, Vol. 474, No. 7351, 2011.

Illustration: Johannes Baumgart

### Thesis

- [23] J. Baumgart. *The Hair Bundle: Fluid-Structure Interaction in the Inner Ear*. PhD thesis, Technische Universität Dresden, 2010. URL: <http://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa-63810>.

### Conferences

- [24] J. Baumgart. The hair bundle's viscous losses in response to tip-link forces. In *DPG Frühjahrstagung der Sektion Kondensierte Materie (SKM), Berlin, 2012*.

- [25] J. Baumgart. Modeling the fluid-structure interaction of the hair bundle. In *New trends in simulating biological systems and soft matter, VW status symposium, Potsdam*, 2012.
- [26] J. Baumgart. Vorgänge im innenohr beim Hören. In *Nuancen in der musikalischen Akustik – Grenzgang zwischen Fakt und Mythos*, Detmold, Germany, 2013. URL: <https://www.dega-akustik.de/fachausschuesse/ma/dokumente/tagungsband-seminar-fama-2013/>.
- [27] J. Baumgart. Wenn es zu laut ist. Einzelfallgerechtigkeit – Irrelevanzprüfung von Schallimmissionen bei deutlicher Richtwertüberschreitung nach dem Konzept der Einzelfallgerechtigkeit. In *28. Windenergi-etag*, 2019.
- [28] J. Baumgart. Beurteilung der Irrelevanz bei überschreitung des Immissionsrichtwertes. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Hamburg*, 2023.
- [29] J. Baumgart, M. Bornitz, T. Zahnert, and M. Fleischer. Finite-element analysis evaluating the influence of middle ear and cochlear implants on the travelling wave in the cochlea. In *Biomedical Technology/Biomedical Engineering, Hannover*, 2014.
- [30] J. Baumgart, J. Bruges, C. Erlenkamper, J.-F. Joanny, and F. Julicher. The xenopus spindle as an active liquid crystal. In *Cell Physics, Saarbrücken*, 2014.
- [31] J. Baumgart, J. Bruges, C. Erlenkamper, J.-F. Joanny, and F. Julicher. The xenopus spindle as an active liquid crystal. In *Biotec forum, Biomechanics across scales - molecules, cells, tissues, Dresden*, 2014.
- [32] J. Baumgart, C. Erlenkamper, J.-F. Joanny, and F. Julicher. The xenopus spindle as an active liquid crystal. In *Workshop on mechanics and growth of tissues: from development to cancer, Paris*, 2014.
- [33] J. Baumgart, M. Fleischer, R. Gartner, and A. Voigt. A three dimensional model of the organ of Corti of the guinea pig. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Rotterdam*, 2009.
- [34] J. Baumgart, M. Fleischer, and R. Grundmann. Fluid-Struktur-Interaktion im Cortischen Organ. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Stuttgart*, 2007.
- [35] J. Baumgart, M. Fleischer, and C. Steele. The traveling wave in the human inner ear studied by means of a finite-element model including middle and

- outer ear. In *23rd International Congress on Sound and Vibration, ICSV 2016*, 2016.
- [36] J. Baumgart, M. Fleischer, and A. Voigt. Fluid-structure interaction in the hair bundle modelled by the finite-element method. In *US National Congress on Theoretical and Applied Mechanics, University Park*, 2010.
- [37] J. Baumgart, M. Fleischer, Y. Yarin, and R. Grundmann. Fluid flow around the stereocilia. In *International Symposium on Experimental and Computational Aerothermodynamics of Internal Flow, Lyon, France*, 2007.
- [38] J. Baumgart and T. Grothe. Einfluss von Geometrievariationen auf die Impedanz von Blasinstrumenten. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Düsseldorf*, 2011.
- [39] J. Baumgart, T. Grothe, and R. Grundmann. Influence of the bocal on the sound of the bassoon. In *Acoustics'08, Paris*, volume 123(5), pages 3016–3016, 2008. URL: <http://dx.doi.org/10.1121/1.2932625>, doi:10.1121/1.2932625.
- [40] J. Baumgart, T. Grothe, and R. Grundmann. Modellierung von Impedanzmessungen an Blasinstrumenten. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Berlin*, 2010.
- [41] J. Baumgart, T. Grothe, A. Voigt, and R. Grundmann. Modellierung von reibungsbehafteter Schallausbreitung in Musikinstrumenten. In *Akustikforschung an Musikinstrumenten und ihre Anwendungen, FAMA, Stuttgart*, 2009.
- [42] J. Baumgart and R. Grundmann. Fluid motion in the organ of Corti. In *19th International Congress on Acoustics, Madrid*, 2007.
- [43] J. Baumgart and R. Grundmann. Influence of the bocal material on the sound of the bassoon. In *International Symposium on Musical Acoustics, Barcelona*, 2007.
- [44] J. Baumgart, M. Kirchner, S. Redemann, J. Woodruff, J.-M. Verbavatz, A. Hyman, T. Müller-Reichert, J. Brugués, and F. Julicher. Local tubulin concentrations in the *c. elegans* metaphase spindle. In *DPG Frühjahrstagung der Sektion Kondensierte Materie (SKM), Dresden*, 2017.
- [45] J. Baumgart, A. Kozlov, T. Risler, R. Gartner, C. Versteegh, M. Fleischer, A. Voigt, and A. Hudspeth. Fluid forces in the hair bundle of the bullfrog's sacculus. In *International Conference on Natural and Biomimetic Mechanosensing, Dresden*, page 38, 2009.

- [46] J. Baumgart, T. Magin, P. Rini, G. Degrez, and O. Chazot. Entry in the true martian atmosphere. In *Fifth European Symposium on Aerothermodynamics for Space Vehicles, Köln*, 2004.
- [47] J. Baumgart, S. Marburg, and R. Grundmann. Effiziente Schallfeldberechnung von Blasinstrumenten mithilfe finiter Elemente. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Braunschweig*, 2006.
- [48] J. Baumgart, S. Marburg, and S. Schneider. Berechnung der Schallleistung von offenen Strukturen über Frequenzbereiche mit Hilfe finiter und infiniter Elemente sowie Lanczos-Padé-Approximation. In *Jahrestagung der Deutschen Gesellschaft für Akustik, München*, 2005.
- [49] J. Baumgart, P. Nikrityuk, and A. Voigt. An electrochemical model of fluid-driven stereocilia of the inner ear. In *80th annual Meeting of the International Association of Applied Mathematics, Gdansk*, 2009.
- [50] J. Baumgart, S. Reber, A. Hyman, and F. Julicher. Spindle length is set by microtubule mass balance. In *The physics of biology, Geneva*, 2013.
- [51] J. Baumgart, S. Reber, A. Hyman, and F. Julicher. Spindle length is set by microtubule mass balance. In *DPG Frühjahrstagung der Sektion Kondensierte Materie (SKM), Regensburg*, 2014.
- [52] J. Baumgart, S. Redemann, S. Furthauer, E. Nazockdast, N. Lindow, A. Kratz, S. Prohaska, T. Müller-Reichert, M. Shelley, and J. Bruges. A model of mitotic spindle architecture in *c. elegans*. In M. Dogterom, C. Janke, A. Musacchio, and M. Steinmetz, editors, *Microtubules: From Atoms to Complex Systems*, 2016.
- [53] J. Baumgart, A. Richter, and R. Grundmann. Aktuelle Methoden zur Untersuchung von Blasinstrumenten. In *Physikalische Beschreibung und instrumentell gestützte Bewertung von Musikinstrumenten, Seminar des Fachausschusses Musikalische Akustik der DEGA, Zwota*, 2007.
- [54] J. Baumgart, T. Spielvogel, and S. Warmuth. Einzelfallgerechtigkeit - ein Konzept für eine situationsbezogene Irrelevanzprüfung. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Hannover*, 2020.
- [55] M. Fleischer, J. Baumgart, Y. Yarin, and H.-J. Hardtke. Strukturmechanik des cochleären Stereozilienbündels. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Dresden*, 2008.
- [56] M. Fleischer, J. Baumgart, Y. Yarin, and T. Zahnert. Estimation of anisotropic material properties of stereocilia using numerical homogenization methods. In *The Structure and Operation of the Hair Bundle, Paris*, 2007.

- [57] M. Fleischer, Y. Yarin, R. Gartner, J. Baumgart, H.-J. Hardtke, and A. Gummer. An extended three-dimensional model of the basilar membrane of the guinea pig and implications for cochlear mechanics. In *Abstracts of the thirty-second annual research meeting of the Association for Research in Otolaryngology, Baltimore*, volume 32, page 21, 2009.
- [58] M. Fleischer, T. Zahnert, C. Harasztosi, M. Nowotny, J. Baumgart, and A. Gummer. The real part of the axial impedance of isolated OHCs is governed by shear losses in the basolateral wall. In *Abstracts of the thirty-third annual research meeting of the Association for Research in Otolaryngology, Anaheim*, volume 33, page 44, 2010.
- [59] R. Gartner, J. Baumgart, M. Fleischer, R. Schmidt, and H.-J. Hardtke. Deriving mechanical properties of stereocilia from their microstructure. In *International Conference on Natural and Biomimetic Mechanosensing, Dresden*, page 50, 2009.
- [60] R. Gartner, M. Fleischer, R. Schmidt, Y. Yarin, C. Harasztosi, J. Baumgart, and A. Gummer. Mechanical properties of outer pillar cells of the organ of Corti. In *Abstracts of the thirty-second annual research meeting of the Association for Research in Otolaryngology, Baltimore*, volume 32, page 22, 2009.
- [61] T. Grothe, J. Baumgart, and R. Grundmann. Charakterisierung von Fagotklängen. In *Physikalische Beschreibung und instrumentell gestützte Bewertung von Musikinstrumenten, Seminar des Fachausschusses Musikalische Akustik der DEGA, Zwota*, 2007.
- [62] T. Grothe, J. Baumgart, and R. Grundmann. Formantenbestimmung von Fagotklängen. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Stuttgart*, 2007.
- [63] T. Grothe, J. Baumgart, and R. Grundmann. The multidimensional character of the bassoon sound. In *International Symposium on Musical Acoustics, Barcelona*, 2007.
- [64] T. Grothe, J. Baumgart, and R. Grundmann. Ein steuerbares Mundstück für Fagotte. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Dresden*, 2008.
- [65] T. Grothe, J. Baumgart, and R. Grundmann. Effect of the structural dynamics of the vocal on the sound spectrum of a bassoon. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Rotterdam*, 2009.



- [66] T. Grothe, J. Baumgart, and R. Grundmann. Experimente zur Intonationsbestimmung beim Fagott. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Berlin*, 2010.
- [67] S. Hille, J. Baumgart, and R. Grundmann. Anregungsmechanismen mit künstlichen Lippen für Fagotte. In *Jahrestagung der Deutschen Gesellschaft für Akustik, Stuttgart*, 2007.
- [68] S. Hille, J. Baumgart, and R. Grundmann. Excitation device for bassoons. In *International Symposium on Musical Acoustics, Barcelona*, 2007.
- [69] A. Kozlov, J. Baumgart, T. Risler, C. Versteegh, and A. Hudspeth. Fluid-mediated coupling and drag reduction in arrays of closely apposed stereocilia. In *The 36th Congress of the International Union of Physiological Sciences*, volume 59(Supplement 1), page 201, 2009.
- [70] C. Nederveen, T. Grothe, and J. Baumgart. Damping of waves at the walls of a conical tube. In *International Symposium on Musical Acoustics, Detmold*, 2019.
- [71] W. Ohno, J. Baumgart, and R. Grundmann. Influence of the mean flow on the timbre of the recorder. In *33rd International Acoustical Conference, European Acoustics Association (EAA), Symposium High Tatras, Slovakia*, 2006.
- [72] D. Oriola, J. Baumgart, J. Bruges, and F. Julicher. Spindle pole focusing is controlled by a buckling instability. In *Cell Physics, Saarbrücken*, 2017.