

Publications

Peer Reviewed Articles

- [1] M. Abel and A. Pikovsky. Parametric excitation of breathers in a nonlinear lattice. *Z. Naturforsch. A*, 52:570–572, 1997.
- [2] M. Abel, A. Pikovsky, and S. Flach. Localisation in a coupled standard map lattice. *Physica D*, 119(1-2):4–21, 1998.
- [3] M. Abel and M. Spicci. The existence of localised solutions in symplectic coupled map systems. *Physica D*, 119(1-2):22–33, 1998.
- [4] M. Buenner H.U. Voss and M. Abel. Identification of continuous spatiotemporal systems. *Phys. Rev. E*, 57(3):2820–2823, 1998.
- [5] H. U. Voss, P. Kolodner, M. Abel, and J. Kurths. Amplitude equations from spatiotemporal binary-fluid convection data. *Phys. Rev. Lett.*, 83(17):3422–3425, 1999.
- [6] M. Abel, M. Cencini, M. Falcioni, D. Vergni, A. Vulpiani, and L. Biferale. On the exit-time approach for ϵ -entropy and turbulent signals. *Physica A*, 280:49–59, 2000. Proceedings of the 2nd Giovanni Paladin memorial conference.
- [7] M. Abel, L. Biferale, M. Cencini, M. Falcioni, D. Vergni, and A. Vulpiani. Exit-time approach to ϵ -entropy. *Phys. Rev. Lett.*, 84(26):6002–6005, 2000.
- [8] M. Abel, L. Biferale, M. Cencini, M. Falcioni, D. Vergni, and A. Vulpiani. Exit-times and ϵ -entropy for dynamical systems, stochastic processes and turbulence. *Physica D*, 147:12–35, 2000.
- [9] M. Abel, A. Celani, D. Vergni, and A. Vulpiani. Front propagation in laminar flows. *Phys. Rev. E*, 64:43607–43620, 2001.
- [10] K.H. Andersen, M. Abel, J. Krug, C. Ellegaard, L.R. Soendergaard, and J. Udesen. Pattern dynamics of vortex ripples in sand: Nonlinear modeling and experimental validation. *Phys. Rev. Lett.*, 88(23):234302, 2002.
- [11] M. Abel, M. Cencini, D. Vergni, and A. Vulpiani. Front speed enhancement in cellular flows. *Chaos*, 12(2):481–488, 2002.
- [12] M. Abel. Nonparametric modeling and spatiotemporal dynamical systems. *Int. J. Bif. Chaos*, 14(6):2027–2039, 2004.
- [13] M. Abel, D. Stojković, and M. Breuer. Nonlinear stochastic estimation of wall models for LES. *Int. J. Heat and Fluid Flow*, 27(2):267–278, 2006.
- [14] A. Straube, M. Abel, and A. Pikovsky. Temporal chaos versus spatial mixing in reaction-advection-diffusion systems. *Phys. Rev. Lett.*, 93:174501, 2004.

- [15] M. Abel, K. Ahnert, S. Mandelj, and J. Kurths. Additive nonparametric reconstruction of dynamical systems from time series. *Phys. Rev. E*, 71:15203, 2005.
- [16] M. Abel, S. Bergweiler, and R. Gerhard-Multhaupt. Synchronization of organ pipes by means of air flow coupling: experimental observations and modeling. *J. Acoust. Soc. Am.*, 119(4):2467 – 2475, 2006.
- [17] K. Ahnert and M. Abel. Numerical differentiation: global versus local methods. *Comput. Phys. Commun.*, 177(10):764–774, 2007. doi:10.1016/j.cpc.2007.03.009.
- [18] M. Breuer, B. Kniazev, and M. Abel. Development of wall models for les of separated flows using statistical evaluations. *Computers and Fluids*, 36:817–837, 2007.
- [19] M. Abel, M. Hoffmann, and J. Kurths. Nonlinear embedding and dimension reduction with isomap. *Chaos*, 2009. in preparation.
- [20] M. Abel, M. Breuer, M. Hoffmann, and J. Kurths. Estimation of the dimension of a wall model for channel flow. 2009. in preparation.
- [21] M. Abel, K. Ahnert, and S. Bergweiler. Synchronization of sound sources. *Phys. Rev. Lett.*, 103(114301), 2009.
- [22] R. Baumbach, M. Abel, M. Körner, and J. Krimmling. Generierung von Mehrwertdiensten aus streckenbezogenen Mautdaten bei besonderer Berücksichtigung des Datenschutzes. *Straßenverkehrstechnik*, 2009.
- [23] M. Abel, M. Kappel, and R. Gerhard. Multi-channel measurement and modeling of a piano. *Acta Acustica*, 2009. submitted.
- [24] M. Abel, K. Ahnert, and S. Bergweiler. Synchronization and the take-away effect. *ISO Journal*, 32, 2009.

Proceedings

- [1] M. Abel and G. Bayer. Vergleich mathematischer Modelle mit Experimenten in eindimensionalen Wellenleitern mit stochastisch verteilten Störstellen. In *Fortschritte der Akustik 20*, pages 905–909, Berlin, 1994. DEGA.
- [2] J. Kurths, U. Schwarz, A. Witt, R.Th. Krampe, and M. Abel. Measures of complexity in signal analysis. In *Chaotic, Fractal, and Nonlinear Signal Processing*, number 375 in Chaotic, Fractal, and Nonlinear Signal Processing, pages 33–54. AIP Conference Proceedings
- [3] M. Abel and K. H. Andersen. Hierarchical markovian models: the meandering jet as example for systems with many time scales:. In G. Boffetta, G. Lacorata, L. Visconti, and A. Vulpiani, editors, *Chaos in geophysical flows*, Torino, 2003. Otto Editore.

- [4] M. Abel, K.H. Andersen, J. Krug, C. Ellegaard, L.R. Soendergaard, and J. Udesen. Experiment and model for the dynamics of vortex ripples in sand. In *EXPERIMENTAL CHAOS: 7th Experimental Chaos Conference*, pages 171–181, San Diego, California (USA), 2003. AIP. AIP Conference Proceedings Volume 676.
- [5] M. Abel, D. Stojković, and M. Breuer. Development of wall models for large-eddy simulation based on nonlinear stochastic estimation. In B. J. Geurts, R. Friedrich, and O. Métais, editors, *Direct and Large-Eddy Simulation – V*, Dordrecht, 2004. Kluwer Academic Press.
- [6] M. Abel, D. Stojković, and M. Breuer. Nonlinear stochastic estimation: A tool for deriving appropriate wall models for les. In J. Peinke, A. Kittel, S. Barth, and M. Oberlack, editors, *Progress in Turbulence*, Berlin, 2005. Springer.
- [7] M. Abel and K. Ahnert. Nonparametric embedding of dynamical systems. In *Proceedings of the 12th International IEEE Workshop on Nonlinear Dynamics of Electronic Systems*. IEEE proceedings, 2004.
- [8] M. Breuer, B. Kniazev, and M. Abel. Towards wall models for les of separated flows. In J. Peinke, A. Kittel, S. Barth, and M. Oberlack, editors, *Progress in Turbulence II*, Berlin, 2005. Springer.
- [9] M. Abel, G. D. Conway, H. Zohm, and the ASDEX Upgrade Team. Scaling and inverse scaling of asdex upgrade reflectometer data. In *Proceedings of the 7th International Reflectometry Workshop for fusion plasma diagnostics (IRW7)*. IPP report, 2005.
- [10] M. Abel and S. Bergweiler. Synchronization of higher harmonics in coupled organ pipes. In *Proceedings of the 13th International IEEE Workshop on Nonlinear Dynamics of Electronic Systems*. IEEE proceedings, 2006.
- [11] S. Bergweiler and M. Abel. Synchronisation gekoppelter Orgelpfeifen. In *Tagungsband DAGA 2006, Fortschritte der Akustik*, Berlin, 2006. Deutsche Gesellschaft für Akustik.
- [12] S. Bergweiler, M. Abel, and D. Zscherpel. Synchronization of an organ pipe under the influence of an external sound pressure signal. In *Tagungsband DAGA 2007, Fortschritte der Akustik*, Berlin, 2007. Deutsche Gesellschaft für Akustik.
- [13] M. Abel and T. Lohfelder. Simulation of the communication behaviour of the german toll system. In *Proceedings of the IWK 2007 meeting*. IWK Proceedings Ilmenau, 2007.
- [14] K. Lüttkopf and M. Abel. Statistics of the truck activity on german motorways. In *Proceedings of the IWK 2007 meeting*. IWK Proceedings Ilmenau, 2007.
- [15] M. Abel and S. Bergweiler. Synchronization of coupled organ pipes. In *Proceedings of the 19th International Congress on Acoustics*, 2007.
- [16] M. Abel. Synchronization of organ pipes. In A. Schneider, editor, *Systematic and Comparative Musicology: Concepts, Methods, Findings*, number 24 in *Hamburger Jahrbuch der Musikwissenschaft*, pages 231 – 240. Peter Lang, Frankfurt(Main), 2008.
- [17] M. Abel and K. Ahnert. Nonlinearities in wind instruments at the example of organ pipes. In *Proceedings of the 34. Deutsche Jahrestagung für Akustik*. DEGA, 2008.

- [18] M. Abel and K. Ahnert. Spectral reconstruction of sound radiated by an organ pipe. In B. Eckhardt, editor, *Proceedings of the 12thEUROMECH European Turbulence Conference*. Springer, Berlin, 2009.

Theses

- [1] M. Abel. Vergleich mathematischer Modelle der Schallstreuung mit Experimenten im Bereich der Mehrfachstreuung, 1993. Diploma Thesis, Inst. for Technical Acoustics, Aachen.
- [2] M. Abel. Localization in driven nonlinear lattices, 1998. Ph. D Thesis, Inst. for Physics, University of Potsdam.
- [3] M. Abel. Turbulent flows: transport, analysis and modeling, 2005. Habilitation Thesis, Inst. for Physics, University of Potsdam.