

Key Publications by Topic (out of over 300)

Nonequilibrium Phase Transitions (Self-Organization) in Biological Coordination

Kelso, J.A.S. (1984). Phase transitions and critical behavior in human bimanual coordination. *American Journal of Physiology: Regulatory, Integrative and Comparative*, 15, R1000-R1004.

Kelso, J.A.S., & Scholz, J.P. (1985). Cooperative phenomena in biological motion. In H. Haken (Ed.), *Complex Systems: Operational approaches in neurobiology, physics and computers*. Springer-Verlag: Berlin.

Kelso, J.A.S., Scholz, J.P. & Schöner, G. (1986). Nonequilibrium phase transitions in coordinated biological motion: Critical fluctuations. *Physics Letters A*, 118, 279-284.

Kelso, J.A.S., Schöner, G., Scholz, J.P., & Haken, H. (1987). Nonequilibrium phase transitions in coordinated movements involving many degrees of freedom. *Annals of the New York Academy of Science*, 504, 293-296.

Kelso, J.A.S., Schöner, G., Scholz, J.P. & Haken, H. (1987). Phase-locked modes, phase transitions and component oscillators in coordinated biological motion, *Physica Scripta*, 35, 79-87.

Kelso, J.A.S. (2010). Instabilities and phase transitions in human brain and behavior. *Frontiers in Human Neuroscience* 4:23. doi:10.3389/fnhum.2010.00023

Scholz, J.P., Kelso, J.A.S. & Schöner, G. (1987). Nonequilibrium phase transitions in coordinated biological motion: Critical slowing down and switching time. *Physics Letters A*, 8, 390-394.

Scholz, J.P. & Kelso, J.A.S. (1989) A quantitative approach to understanding the formation and change of coordinated movement patterns. *Journal of Motor Behavior*, 21, 122-144.

Schöner, G. & Kelso, J.A.S. (1988) Dynamic pattern generation in behavioral and neural systems. *Science*, 239, 1513-1520.

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Theoretical Modeling of Biological Coordination

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Schöner, G., Haken, H., & Kelso, J.A.S. (1986). A stochastic theory of phase transitions in human hand movement. *Biological Cybernetics*, 53, 247-257.

Kelso, J.A.S., DelColle, J. & Schöner, G. (1990). Action-Perception as a pattern formation process. In M. Jeannerod (Ed.), *Attention and Performance XIII*, Hillsdale, NJ: Erlbaum, pp. 139-169.

Eisenhammer, T., Hubler, A., Packard, N. & Kelso, J.A.S. (1991). Modeling experimental time series with ordinary differential equations. *Biological Cybernetics*, 65, 107-112.

Fuchs, A. & Kelso, J.A.S. (1994). A theoretical note on models of interlimb coordination. *Journal of Experimental Psychology: Human Perception and Performance*, 20/5, 1088-1097.

Fuchs, A., Jirsa, V. K., Haken, H., & Kelso, J. A. S. (1996). Extending the HKB-Model of coordinated movement to oscillators with different eigenfrequencies. *Biological Cybernetics* 74, 21-30.

Schöner, G. & Kelso, J.A.S. (1988). A synergetic theory of environmentally-specified and learned patterns of movement coordination. I. Relative phase dynamics. *Biological Cybernetics* 58, 71-80. II. Component oscillator dynamics. *Biological Cybernetics*, 58, 81-89.

Nonequilibrium Phase Transitions (Self-Organization) in the Human Brain

Kelso, J.A.S., Bressler, S.L., Buchanan, S., DeGuzman, G.C., Ding, M., Fuchs, A. & Holroyd, T. (1991). Cooperative and critical phenomena in the human brain revealed by multiple SQUIDS. In D. Duke & W. Pritchard, (Eds.), *Measuring Chaos in the Human Brain*, 97-112. World Scientific, New Jersey.

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Fuchs, A., Kelso, J.A.S. & Haken, H. (1992). Phase transitions in the human brain: Spatial mode dynamics. *International Journal of Bifurcation and Chaos*, 2, 917-939.

Mayville, J.M., Bressler, S.L., Fuchs, A., & Kelso, J.A.S. (1999). Spatiotemporal reorganization of electrical activity in the human brain associated with a phase transition in rhythmic auditory-motor coordination. *Experimental Brain Research*, 127, 371-381.

Wallenstein, G.V., Kelso, J.A.S. & Bressler, S.L. (1995). Phase transitions in spatiotemporal patterns of brain activity and behavior. *Physica D*, 84, 626-634.

Kelso, J.A.S. & Fuchs, A. (1995). Self-organizing dynamics of the human brain: Critical instabilities and Sil'nikov chaos. *Chaos*, 5, (1), 64-69.

Fuchs, A. Mayville, J., Cheyne, D., Weinberg, H., Deecke, L., & Kelso, J.A.S. (2000) Spatiotemporal analysis of neuromagnetic events underlying the emergence of coordinative instabilities. *NeuroImage*, 12, 71-84.

Theoretical Modeling of Brain & Behavioral Coordination

Kelso, J.A.S., Dumas, G., & Tognoli, E. (2013) Outline of a general theory of behavior and brain coordination. *Neural Networks*, 37, 120-131. (25th Commemorative Issue)

Bressler, S.L. & Kelso, J.A.S. (2001) Cortical coordination dynamics and cognition. *Trends in Cognitive Sciences*, 5, 26-36.

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Kelso, J.A.S. (1991). Behavioral and neural pattern generation: The concept of Neurobehavioral Dynamical System (NBDS). In H.P. Koepchen & T. Huopaniemi (Eds.), *Cardiorespiratory and Motor Coordination*, pp. 224-238, Springer-Verlag, Berlin.

Nagashino, H. & Kelso, J.A.S. (1992). Phase transitions in oscillatory neural networks. *SPIE, Vol 1710, Science of Artificial Neural Networks*, Washington, DC. Pp. 279-287.

Wade, J.J., McDaid, L.J., Harkin, J., Crunelli, V., & Kelso, J.A.S. (Eds.) (2013). **Biophysically-based computational models of astrocyte~neuron coupling and their functional significance**. *Frontiers in Computational Neuroscience* Available at http://www.frontiersin.org/books/all_books

Wade, J.J., McDaid, L.J., Harkin, J.G., Crunelli, V., & Kelso, J.A.S. (2011) Bidirectional coupling between astrocytes and neurons mediates learning and dynamic coordination in the brain: A multiple modeling approach. *PLoS ONE*, 6, e29445.

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Metastability

Kelso, J.A.S. (1992). Coordination dynamics of human brain and behavior. *Springer Proc. in Physics*, 69, 223-234

Kelso, J.A.S., DeGuzman, G.C. & Holroyd, T. (1991). The self-organized phase attractive dynamics of coordination. In A. Babloyantz, (Ed.), *Self-organization, Emerging Properties and Learning*, Series B, Vol. 260 41-62, Plenum, New York.

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Kelso, J.A.S. (2010) Metastable mind. In D. Hauptmann & W. Niedlich (eds) *Cognitive Architecture. From Bio-Politics to Noo-Politics*. Rotterdam, 010 Publishers, pp.116-138.

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Tognoli, E. & Kelso, J.A.S. (2014). The metastable brain. *Neuron*, 81, 35-48.

1/f fluctuations

Kelso, J.A.S. & Ding, M. (1993). Fluctuations, intermittency and controllable chaos in biological coordination. In K.M. Newell & D.M. Corcos, (Eds.), *Variability and Motor Control*, Human Kinetics, Champaign, IL.

Chen, Y., Ding, M., & Kelso, J.A.S. (1997). Long term memory processes ($1/f^\alpha$ type) in human coordination. *Physics Review Letters*, 79, 4501-4504.

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Coordination Dynamics

Kelso, J.A.S. (1995). *Dynamic Patterns: The Self-Organization of Brain and Behavior*. Cambridge, MA: The MIT Press. [Paperback edition, 1997, 4th Printing].

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Kelso, J.A.S., & Engstrom, D. A. (2006). *The Complementary Nature*, Cambridge, MA: The MIT Press. Paperback Edition, March 2008.

Coordinative Structures

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Discrete Movements

Kelso, J.A.S. (1977). Motor control mechanisms underlying human movement reproduction. *Journal of Experimental Psychology: Human Perception and Performance*, *3*, 529-543.

Kelso, J.A.S., Southard, D. & Goodman, D. (1979). On the coordination of two-handed movements. *Journal of Experimental Psychology: Human Perception and Performance*, *5*, 229-238.

Kelso, J.A.S., Putnam, C.A., & Goodman, D. (1983). On the space-time structure of human interlimb coordination. *Quarterly Journal of Experimental Psychology*, *35A*, 347-375.

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Rhythmic Movements

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Kay, B.A., Saltzman, E.L. & Kelso, J.A.S. (1991). Steady-state and perturbed rhythmical movements: Dynamical modeling using a variety of analytic tools. *Journal of Experimental Psychology: Human Perception and Performance*, *17*, 183-197.

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Sensorimotor Coordination: Experiment & Theory

Kelso, J.A.S., & Kay, B. (1987). Information and control: A macroscopic basis for perception-action coupling. In H. Heuer and A.F. Sanders (Eds.), *Tutorials in Perception and Action*, Hillsdale, N.J: Erlbaum.

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Multi-limb Coordination: Experiment & Theory

Kelso, J.A.S. & Jeka, J.J. (1992). Symmetry breaking dynamics of human multilimb coordination. *Journal of Experimental Psychology: Human Perception and Performance*, 18, 3, 645-668.

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Multifrequency Coordination: Experiment & Theory

Kelso, J.A.S. & DeGuzman, G.C. (1988). Order in time: How the cooperation between the hands informs the design of the brain. In H. Haken (Ed.), *Neural and Synergetic Computers*, Springer, Berlin, pp. 180-196.

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Social Coordination: Experiment & Theory

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Lagarde, J., Peham, C., Licke, T., & Kelso, J.A.S. (2005) Coordination dynamics of the horse~rider system. *Journal of Motor Behavior*, 37, 419-424.

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'Anchoring' / Parametric Stabilization: Experiment & Theory

Fink, P., Kelso, J.A.S., Jirsa, V.K., & Foo, P. (2000). Local and global stabilization of coordination by sensory information. *Experimental Brain Research*, 134, 9-20.

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Intentional dynamics: Experiment & Theory

Kelso, J.A.S., Scholz, J.P. & Schönner, G. (1988). Dynamics governs switching among patterns of coordination in biological movement. *Phys. Lett. A*. 134, 8-12.

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Learning: Experiment & Theory

--Experiments

Kelso, J.A.S., & Zanone, P.G. (2002). Coordination dynamics of learning and transfer across different effector systems. *Journal of Experimental Psychology: Human Perception and Performance*, 28, 776-797.

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--Theoretical Modeling

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Recruitment and annihilation of new degrees of freedom: Experiment & Theory

Kelso, J.A.S., Buchanan, J.J., DeGuzman, G.C. & Ding, M. (1993). Spontaneous recruitment and annihilation of degrees of freedom in biological coordination. *Physics Letters A*, 179, 364-368.

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Trajectory Formation: Experiment & Theory

Buchanan, J. J., Kelso, J. A. S., & Fuchs, A. (1996). Coordination dynamics of trajectory formation. *Biological Cybernetics* 74, 41-54.

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Motor Control

--Behavioral Studies (kinematics)

Kelso, J.A.S. & Feldman, A.G. (1989). Bi-articular muscles in the context of dynamical approaches to motor control. *Human Movement Science* 8, 533-541.

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--Major Reviews

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