

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**The nature and perception of fluctuations in human musical rhythms**<sup>1</sup> HOLGER HENNIG, Harvard University, and Max Planck Institute for Dynamics and Self-Organization (MPIDS), Goettingen, Germany, RAGNAR FLEISCHMANN, MPIDS, ANNEKE FREDEBOHM, Institute of Psychology, University of Goettingen, YORK HAGMAYER, Kings College, London, UK, JAN NAGLER, ANNETTE WITT, MPIDS, FABIAN THEIS, Institute for Bioinformatics and Systems Biology, Helmholtz Zentrum Munich, Germany, THEO GEISEL, MPIDS — Although human musical performances represent one of the most valuable achievements of mankind, the best musicians perform imperfectly. Musical rhythms are not entirely accurate and thus inevitably deviate from the ideal beat pattern. Nevertheless, computer generated perfect beat patterns are frequently devalued by listeners due to a perceived lack of human touch. Professional audio editing software therefore offers a humanizing feature which artificially generates rhythmic fluctuations. However, the built-in humanizing units are essentially random number generators producing only simple uncorrelated fluctuations. Here, for the first time, we establish long-range fluctuations as an inevitable natural companion of both simple and complex human rhythmic performances [1]. Moreover, we demonstrate that listeners strongly prefer long-range correlated fluctuations in musical rhythms. Thus, the favorable fluctuation type for humanizing interbeat intervals coincides with the one generically inherent in human musical performances. [1] HH et al., PLoS ONE,6,e26457 (2011)

<sup>1</sup>We acknowledge financial support by the BCCN, grant no. 01GQ0430 (AW and TG).

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Date submitted: 28 Nov 2011

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