

CURRICULUM VITAE

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DATE AND PLACE OF BIRTH: May 9, 1941; Rüti (Kanton Zürich), Switzerland

EDUCATION AND RELATED PROFESSIONAL ACTIVITIES:

1957 - 1960 Commercial apprenticeship

1963 - 1968 Student of theoretical physics, Eidgenössische Technische Hochschule (ETH), Zürich (Degree: Diploma)

1968 - 1970 Research assistant, jointly in statistics, Prof. P.J. Huber (ETH) and in pediatric EEG department, Prof. G. Dumermuth, (University of Zurich)

1970 - 1971 Visiting Statistics Department, Princeton University

1971 - 1974 Research assistant, jointly in statistics (ETH) and in pediatric EEG department (University of Zurich)

1972 PhD in mathematics
Title: System identification, poly spectra, and related methods
1st reviewer: Prof. P.J. Huber
2nd reviewer: Prof. R.E. Kalman

1974 - 1976 Senior research assistant in statistics for "Kinderspital", University of Zurich (EEG analysis, analysis of longitudinal growth data, general consulting)

ACADEMIC APPOINTMENTS:

1975	Habilitation, Privatdozent, ETH
1976	Associate Professor in Biostatistics, University of Heidelberg (Head of Abteilung Biostatistik, Zentralinstitut für Seelische Gesundheit, Mannheim)
1991	Full Professor in Biostatistics, University of Zurich
2006	Retired

TEACHING:

1972 - 1976	Courses in time series analysis (ETH) for mathematicians and engineers Courses in biomathematics and in biostatistics for biologists (University of Zurich)
1976 - 1991	Courses in biomathematics for medical students; Seminars in statistics (various fields) for mathematical students (University of Heidelberg)
1991 - 2006	Courses and other forms of training in biostatistics for medical students (University of Zurich)
1994 -	Teaching in postgraduate courses

THESES SUPERVISED:

Wolfgang Härdle	PhD in Mathematics 1982, University of Heidelberg
Hans-Georg Müller	MD, Universität Heidelberg, 1981
Alois Kneip	PhD in Mathematics 1988, University of Heidelberg
Christoph Besthorn	PhD in Human Biology 1990, University of Heidelberg
Michael Brockmann	PhD in Mathematics 1993, University of Heidelberg
Michael M. Studer	PhD in Mathematics 2002, ETH Zurich

PROFESSIONAL SOCIETIES:

International Biometric Society
Institute of Mathematical Statistics
American Statistical Association
Royal Statistical Society (Fellow)
Schweizerische EEG-Gesellschaft

MAJOR RESEARCH INTERESTS:

Statistics: Nonparametric curve estimation
 Analysis of follow-up data
 Data analysis
 Time series analysis

Interdisciplinary: Neuromotor development
 Quantitative EEG analysis
 Growth and development
 Neuropsychiatric disorders

RESEARCH GRANTS:

1978 - 1985	Project 'Neurophysiological correlates of mental retardation' (funded by German NSF via SFB 116 "Psychiatrische Epidemiologie")
1978 - 1992	Project 'Methods of time series analysis' (funded by German NSF via SFB 123 "Stochastische Mathematische Modelle")
1986 - 1990	Project 'EEG and emotion' (funded by the German NSF)
1993 - 1998	Project 'Statistical methods for curves and longitudinal data' (funded by the Swiss NSF)
1996 - 2001	Project 'Auswertung der Zürcher Longitudinalstudien' with Prof. R.H. Largo, Kinderspital Zürich (funded by the Swiss NSF)
2001 - 2006	Continuation of above project
2006 -	Continuation of above project
1998 - 2001	Project 'Semiparametric Modeling' with Prof. Dr. B. Seifert (funded by the Swiss NSF)
2001 - 2004	Continuation of above project

2004 - 2006

Project 'Model selection for regression and functional data'
with Prof. Dr. B. Seifert (funded by the Swiss NSF)

SERVICES TO THE PROFESSION:

Associate Editor to: BIOMETRICS (1989 - 1993)
COMPUTATIONAL STATISTICS & DATA ANALYSIS
(till 2006)
BIOMETRICAL JOURNAL (till 2006)

Reviews for the following journals: Annals of Statistics
Probability Theory and Related Fields
Biometrika
Journal of the American Statistical Association
Statistics and Probability Letters
Communications in Statistics
IEEE Transactions on Biomedical Engineering
Electroencephalography and Clinical Neurophysiology
Psychophysiology
Annals of Human Biology
American Journal of Anthropology

Reviews of grant proposals for various funding agencies
Organization of sessions at national and international conferences

PUBLICATIONS:

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Research in statistics
(including methodological papers in non-statistical journals)

Dumermuth, G., P.J. Huber, B. Kleiner, Th. Gasser (1970). Numerical analysis of electroencephalographic data. IEEE Transactions on Audio and Electroacoustics, AU-18, 404-411.

- Huber, P.J., B. Kleiner, Th. Gasser, G. Dumermuth (1971). Statistical methods for investigating phase relations in stationary stochastic processes. *IEEE Transactions on Audio and Electroacoustics*, AU-19, 78-86.
- Liebling, G., Th. Gasser (1973). Tschebyscheff-Approximation zur Parameterschätzung von Vorhersagemodellen. in: *Operations Research Verfahren XIX*, ed. R. Henn et al., Verlag Anton Hain, Meisenheim am Glan, pp. 42-49.
- Gasser, Th. (1974). Spline smoothing of spectra. in: *COMPSTAT*, ed. G. Bruckmann et al., Physica Verlag, Wien, pp. 323-332.
- Gasser, Th. (1975). Goodness-of-fit tests for correlated data. *Biometrika*, 62, 563-570.
- Gasser, Th., G. Dumermuth (1976). Polyspektrale Methoden in der EEG-Analyse. *Biomedizinische Technik*, 21, 273-274.
- Gasser, Th. (1977). General characteristics of the EEG as a signal. in: *EEG Informatics. A Didactic Review of Methods and Applications of EEG Data Processing*, ed. A. Remond, Elsevier, Amsterdam, pp. 37-55.
- Gasser, Th. (1977). Tests of goodness-of-fit for stationary processes. in: *Transactions of the 7th Prague Conference on Information Theory, Statistical Decision Functions, Random Processes and of the 1974 European Meeting of Statisticians*. Academia Publishing House, Prague, pp. 173-180.
- Gasser, Th. (1978). Konzepte und Methoden der robusten Statistik. *Psychiatrische Epidemiologie*, ed. H. Häfner, Springer Verlag, Heidelberg, pp. 233-245.
- Dumermuth, G., Th. Gasser (1978). The computation of EEG bispectra. *Computer Programs in Biomedicine*, 8, 235-242.
- Gasser, Th. (1979). Statistical handling of EEG data. *Pharmakopsychiatrie/Neuro-Psychopharmakologie*, 12, 210-219.
- Gasser, Th., G. Dumermuth (1979). Non-Gaussianity and non-linearity in electroencephalographic time series. in: *Stochastic Control Theory and Stochastic Differential Equations*, ed. M. Kohlmann and W. Vogel, Springer Verlag, Berlin, pp. 373-386.
- Müller, H.G., Th. Gasser (1979). Optimal convergence properties of kernel estimates of derivatives of a density function. in: *Smoothing Techniques for Curve Estimation*, ed. Th. Gasser and M. Rosenblatt, Lecture Notes in Mathematics, No. 757, Springer Verlag, Berlin, pp. 144-154.
- Gasser, Th., H.G. Müller (1979). Kernel estimation of regression functions. in: *Smoothing Techniques for Curve Estimation*, ed. Th. Gasser and M. Rosenblatt, Lecture Notes in Mathematics, No. 757, Springer Verlag, Berlin, pp. 23-68.
- Krumm, B., Th. Gasser (1980). Robustes Glätten. in: *Robuste Verfahren*, ed. H. Nowak und R. Zentgraf, Medizinische Informatik und Statistik, Band 20, Springer Verlag, Berlin, pp. 55-65.
- Stützle, W., Th. Gasser, L. Molinari, R.H. Largo, A. Prader, P.J. Huber (1980). Shape-invariant modeling of human growth. *Annals of Human Biology*, 7, 507-528.
- Gasser, Th., A. Kneip, R. Verleger (1982). Modification of the EEG time constant by digital filtering. *Psychophysiology*, 19, 237-240.
- Gasser, Th., P. Bächer, J. Möcks (1982). Transformations towards the normal distribution of broad band spectrum parameters of the EEG. *Electroencephalography and Clinical Neurophysiology*, 53, 119-124.
- Verleger, R., Th. Gasser, J. Möcks (1982). Correction of EOG artifacts in event related potentials of the EEG: aspects of reliability and validity. *Psycho-physiology*, 19, 472-480.

- Gasser, Th., J. Möcks (1983). Graphical representation of multidimensional EEG data and classificatory aspects. *Electroencephalography and Clinical Neurophysiology*, 55, 609-612.
- Gasser, Th., J. Möcks, R. Verleger (1983). SELAVCO: a method to deal with trial-to-trial variability of evoked potentials. *Electroencephalography and Clinical Neurophysiology*, 55, 717-723.
- Singh, R.S., Th. Gasser, B. Prasad (1983). Nonparametric estimates of distribution functions. *Communications in Statistics*, 12, 2095-2108.
- Möcks, J., Pham Dinh Tuan, Th. Gasser (1984). Testing for homogeneity of noisy signals evoked by repeated stimuli. *Annals of Statistics*, 12, 193-209.
- Gasser, Th., H.G. Müller, W. Köhler, L. Molinari, A. Prader (1984). Nonparametric regression analysis of growth curves. *Annals of Statistics*, 12, 210-229.
- Härdle, W., Th. Gasser (1984). Robust non-parametric function fitting. *Journal of the Royal Statistical Society, (B)*, 46, 42-51.
- Möcks, J., Th. Gasser, Pham Dinh Tuan (1984). Variability of single visual evoked potentials evaluated by two new statistical tests. *Electroencephalography and Clinical Neurophysiology*, 57, 571-580.
- Gasser, Th., H.G. Müller (1984). Estimating regression functions and their derivatives by the kernel method. *Scandinavian Journal of Statistics*, 11, 171-185.
- Gasser, Th., W. Köhler, H.G. Müller, A. Kneip, R. Largo, L. Molinari, A. Prader (1984). Velocity and acceleration of height growth using kernel estimation. *Annals of Human Biology*, 11, 397-411.
- Gasser, Th., H.G. Müller, V. Mammitzsch (1985). Kernels for nonparametric curve estimation. *Journal of the Royal Statistical Society, (B)*, 47, 238-252.
- Härdle, W., Th. Gasser (1985). On robust kernel estimation of derivatives of regression functions. *Scandinavian Journal of Statistics*, 12, 233-240.
- Steinberg, H.-W., Th. Gasser, J. Franke (1985). Fitting autoregressive models to EEG time series: An empirical comparison of estimates of the order. *IEEE Transactions on Acoustics, Speech, and Signal Processing, ASSP-33*, 143-150.
- Jennen, Ch., Th. Gasser (1986). Asymptotic power of runs tests. *Scandinavian Journal of Statistics*, 13, 263-269.
- Gasser, Th., J. Möcks, W. Köhler (1986). Amplitude probability distribution of noise in flash-evoked potentials and robust response estimates. *IEEE Transactions on Biomedical Engineering, BME-33*, 579-583.
- Gasser, Th., J. Möcks, W. Köhler, J.P.C. de Weerd (1986). Performance and measures of performance for estimates of brain potentials, using real data. *IEEE Transactions on Biomedical Engineering, BME-33*, 949-957.
- Möcks, J., Th. Gasser, W. Köhler, J.P.C. de Weerd (1986). Does filtering and smoothing of average potentials really pay? A statistical comparison. *Electroencephalography and Clinical Neurophysiology*, 64, 469-480.
- Gasser, Th., L. Sroka, Ch. Jennen-Steinmetz (1986). Residual variance and residual pattern in nonlinear regression. *Biometrika*, 73, 625-633.
- Gasser, Th., W. Köhler, Ch. Jennen-Steinmetz, L. Sroka (1986). The analysis of noisy signals by nonparametric smoothing and differentiation. *IEEE Transactions on Biomedical Engineering, BME-33*, 1129-1133.
- Müller, H.G., Th. Gasser (1986). Nonparametric estimation of spectral densities and their derivatives: Integrated mean squared error, choice of window width and applications. *Cahiers du Centre d'Etudes de Recherche Operationelle*, 28, 163-173.

- Gasser, Th., L. Sroka, J. Möcks (1986). The correction of EOG artifacts by frequency dependent and frequency independent methods. *Psychophysiology*, 23, 704-712.
- Pham Dinh Tuan, J. Möcks, W. Köhler, Th. Gasser (1987). Variable latencies of noisy signals: estimation and testing in brain potential data. *Biometrika*, 74, 525-534.
- Kneip, A., Th. Gasser (1988). Convergence and consistency results for self modeling nonlinear regression. *Annals of Statistics*, 16, 82-112.
- Möcks, J., W. Köhler, Th. Gasser, Pham Dinh Tuan (1988). Novel approaches to the problem of latency jitter. *Psychophysiology*, 25, 217-225.
- Möcks, J., Th. Gasser, W. Köhler (1988). Basic statistical parameters of event-related potentials. *Journal of Psychophysiology*, 2, 61-70.
- Jennen-Steinmetz, Ch., Th. Gasser (1988). A unifying approach to nonparametric regression estimation. *Journal of the American Statistical Association*, 83, 1084-1089.
- Möcks, J., Th. Gasser, Pham Dinh Tuan (1988). Variability of single event-related brain potentials. *Proceedings International Symposium on Circuits and Systems, IEEE, Helsinki*, 2141-2144.
- Gasser, Th., A. Kneip (1989). Discussion of "Linear Smoothers and Additive Models" by A. Buja, T. Hastie and R. Tibshirani. *Annals of Statistics*, 17, 532-535.
- Gasser, Th., A. Kneip, A. Binding, R. Largo, A. Prader, L. Molinari (1989). Flexible methods for nonparametric fitting of individual and sample growth curves. in: *Auxology* 88, ed. J.M. Tanner, Smith-Gordon, London, 23-30.
- Gasser, Th. (1989). The analysis of biomedical signals by nonparametric methods. *Statistique et Analyse des Données*, 14, 85-101.
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- Gasser, Th. (1991). Analyzing curves using kernel estimators. *Pediatric Nephrology*, 5, 447-450.
- Gasser, Th., E. Herrmann (1991). Data-adaptive kernel estimation. in: *Nonparametric Functional Estimation and Related Topics*, ed. G. Roussas, Kluwer Academic Publishers, Dordrecht, pp. 67-79.
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- Gasser, Th., J. Engel, Ch. Jennen-Steinmetz (1991). Discussion of "Choosing a kernel regression estimator", by C.K. Chu and J.S. Marron. *Statistical Science*, 419-421.
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- Kneip, A., Th. Gasser (1992). Statistical tools to analyze data representing a sample of curves. *Annals of Statistics*, 20, 1266-1305.

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- Gasser, Th., J. Engel, B. Seifert (1993). Nonparametric function estimation. in: *Handbook of Statistics*, C.R. Rao, ed., Vol. 9, 423-465.
- Seifert, B., Th. Gasser, A. Wolf (1993). Nonparametric estimation of residual variance revisited. *Biometrika*, 80, 373-83.
- Beran, J., Th. Gasser (1994). Testing equality of variances for paired time series. *Journal of Time Series Analysis*, 16, 165-176.
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- Seifert, B., M. Brockmann, J. Engel, Th. Gasser (1994). Fast algorithms for nonparametric curve estimation. *Journal of Computational and Graphical Statistics*. 3, 192-213.
- Seifert, B., M. Brockmann, J. Engel, Th. Gasser (1994). Fast and stable computation of local polynomials. *Computing Science and Statistics*, 26, 18-27.
- Wang, K., B. Seifert, Th. Gasser (1995). Discussion of "Wavelet shrinkage: asymptopia?" by Donoho et al., *Journal of the Royal Statistical Society, (B)*, 57, 341-343.
- Gasser, Th., A. Kneip (1995). Searching for structure in curve samples. *Journal of the American Statistical Association*, 90, 1179-1188.
- Herrmann, E., M.P. Wand, J. Engel, Th. Gasser (1995). A bandwidth selector for bivariate kernel regression. *Journal of the Royal Statistical Society, (B)*, 57, 171-180.
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- Seifert, B., Th. Gasser (1996). Finite sample variance of local polynomials: Analysis and solutions. *Journal of the American Statistical Association*, 91, 267-275.
- Seifert, B., Th. Gasser (1996). Variance properties of local polynomials and ensuing modifications. *Statistical Theory and Computational Aspects of Smoothing. Proceedings of the COMPSTAT '94 Satellite Meeting, Semmering*, eds. W. Härdle, M.G. Schimek, pp. 50-79.
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- Gasser, Th., L. Molinari, M. Roos (1996). Methodology for the establishment of growth standards. *Hormone Research*, 45 (suppl 2), 2-7.
- Wang, K., Th. Gasser (1996). Optimal rate for estimating local bandwidth in kernel estimators of regression curves. *Scandinavian Journal of Statistics*, 23, 303-312.
- Wang, K., Th. Gasser (1997). Alignment of curves by dynamic time warping. *Annals of Statistics*, 25, 1251-1276.
- Fan, J., Th. Gasser, I. Gijbels, M. Brockmann, J. Engel (1997). Local polynomial regression: optimal kernels and asymptotic minimax efficiency. *Annals of the Institute of Mathematical Statistics*, 49, 79-99.
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- Wang, K., Th. Gasser (1998). Asymptotic and bootstrap confidence bounds for the structural average of curves. *Annals of Statistics*, 26, 972-991.
- Gasser, Th., P. Hall, B. Presnell (1998). Nonparametric estimation of the mode of a distribution of random curves. *Journal of the Royal Statistical Society, (B)*, 60, 681-691.
- Seifert, B., Th. Gasser (1998). Ridging methods in local polynomial regression, in S. Weisberg (ed.), *Dimension Reduction, Computational Complexity, and Information*, Vol. 30 of *Computing Science and Statistics*, Interface Foundation of North America, Inc., Fairfax Station, VA 22039-7460, pp. 467-476.
- Cheng, M.-Y., Th. Gasser, P. Hall (1999). Nonparametric density estimation under unimodality and monotonicity constraints. *Journal of Computational and Graphical Statistics*, 8, 1-21.
- Wang, K., Th. Gasser (1999). Synchronizing sample curves nonparametrically. *Annals of Statistics*, 27, 439-460.
- Seifert, B., Th. Gasser (2000). Data adaptive ridging in local polynomial regression. *Journal of Computational and Graphical Statistics*, 9, 338-360.
- Rousson, V., Th. Gasser, B. Seifert (2002). Assessing intrarater, interrater and test-retest reliability of continuous measurements. *Statistics in Medicine*, 21, 3431-3446.
- Rousson, V., Th. Gasser, B. Seifert (2003). Confidence intervals for intraclass correlation. *Scandinavian Journal of Statistics*, 30, 617-624.
- Gasser, Th., V. Rousson (2004). Modelling neuromotor data with floor effects. *Statistics in Medicine*, 23, 3641-3653.
- Gervini, D., Th. Gasser (2004). Self-modeling warping functions. *Journal of the Royal Statistical Society, Series B*, 66, Part 4, 959-971.
- Rousson, V., Th. Gasser (2004). Simple component analysis. *Applied Statistics*, 53, 539-555.
- Rousson, V., Th. Gasser (2004). Reliability. Contribution to the *Encyclopedia of Biopharmaceutical Statistics*, Second Edition, S.-H. Chow Editor, Marcel Dekker. On-line publication on <http://www.dekker.com/servlet/product/DOI/101081EEBS120023585>.
- Sheehy, A., Th. Gasser, V. Rousson (2005). Nonparametric measures of variance explained. *Journal of Nonparametric Statistics*, 17, 765-776.
- Studer, M., B. Seifert, and Th. Gasser (2005). Nonparametric regression penalizing deviations from additivity. *Annals of Statistics*, 33, 1295-1329.
- Gervini, D., Th. Gasser (2005). Maximum likelihood estimation of the structural mean of a sample of curves. *Biometrika*, 92, 801-820.

Submitted for publication:

Park, J., Gasser, Th. and Rousson, V. (2006). Structural Components in Functional Data. *Journal of the American Statistical Association*. Under revision.

Research in Electroencephalography

Dumermuth, G., P.J. Huber, B. Kleiner, Th. Gasser (1971). Analysis of the interrelations between frequency bands of the EEG by means of the bispectrum. *Electroencephalography and Clinical Neurophysiology*, 31, 137-148.

- Dumermuth, G., Th. Gasser, B. Lange (1975). Aspects of EEG analysis in the frequency domain. in: CEAN - Computerized EEG Analysis, ed. G. Dolce and H. Künkel, G. Fischer Verlag, Stuttgart, pp. 429-457.
- Dumermuth, G., Th. Gasser, A. Hecker, M. Herdan, B. Lange (1976). Exploration of EEG components in the beta frequency range. in: Quantitative Analytic Studies in Epilepsie, ed. P. Kellaway and I. Petersen, Raven Press, New York, pp. 533-558.
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- Gasser, Th., J. Möcks, P. Bächer (1983). Topographic factor analysis of the EEG with applications to development and to mental retardation. *Electroencephalography and Clinical Neurophysiology*, 55, 445-463.
- Gasser, Th., I.v. Loucadou-Müller, R. Verleger, P. Bächer (1983). Correlating EEG and IQ: A new look at an old problem using computerized EEG parameters. *Electroencephalography and Clinical Neurophysiology*, 55, 493-504.
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- Möcks, J., Th. Gasser (1984). How to select epochs of the EEG at rest for quantitative analysis. *Electroencephalography and Clinical Neurophysiology*, 58, 89-92.
- Verleger, R., Th. Gasser, J. Möcks (1985). Short term changes in event related potentials during concept learning. *Biological Psychology*, 20, 1-16.
- Gasser, Th., P. Bächer, H.W. Steinberg (1985). Test-retest reliability of spectral parameters of the EEG. *Electroencephalography and Clinical Neurophysiology*, 60, 312-319.
- Gasser, Th., L. Sroka, J. Möcks (1985). The transfer of EOG-activity into the EEG for eyes open and closed. *Electroencephalography and Clinical Neurophysiology*, 61, 181-193.
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- Gasser, Th., Ch. Jennen, R. Verleger (1987). EEG coherence at rest and during a visual task in two groups of children. *Electroencephalography and Clinical Neurophysiology*, 67, 151-158.
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- Gasser, Th., J. Pietz, D. Schellberg, W. Köhler (1988). Flash evoked potentials for mildly mentally retarded and normal children. *Developmental Medicine and Child Neurology*, 30, 638-645.
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- Pfleger, W., D. Schellberg, Ch. Besthorn, Th. Gasser (1990). Emotion and brain: effects of non-verbal affection stimulation on male right-handers. in: *Psychophysiological Brain Research (Vol. 2)*, ed. C.H.M. Brunia, A.W.K. Gaillard, A. Kok, Tilburg University Press, pp. 65-69.
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- Schreiter Gasser, U., Th. Gasser, P. Ziegler (1993). Quantitative EEG analysis in early onset Alzheimer's disease: a controlled study. *Electroencephalography and Clinical Neurophysiology*, 86, 15-22.
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Submitted for publication:

Gasser, Th., V. Rousson, U. Schreiter Gasser (2006): Topographic Components of EEG Band Power.

Research in Growth and Development

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