

# List of publications of Pierre Mathys

List fulfilling the [Guide for applicants 2017](#)'s requirements

## 3. Articles published in peer-review journals

1. Lonys, L., Vanhoestenberghé, A., Huberty, V., Hiernaux, M., Cauche, N., Julemont, N., Debelle, A., Huberland, F., Acuna Otarola, V., Godfraind, C., Devière, J., Delchambre, A., **Mathys, P.**, & Nonclercq, A. (2016, June). Design and implementation of a less invasive gastrostimulator. *European Journal of Translational Myology*.
2. Lonys, L., Vanhoestenberghé, A., Julemont, N., Godet, S., Delplancke, M.-P., **Mathys, P.**, & Nonclercq, A. (2015, January 06). Silicone rubber encapsulation for an endoscopically implantable gastrostimulator. *Medical & biological engineering & computing*, 53(4), 319-329. doi:10.1007/s11517-014-1236-9
3. Nonclercq, A., Foulon, M., Verheulpen, D., De Cock, C., Buzatu, M., **Mathys, P.**, & Van Bogaert, P. (2012). Cluster-based spike detection algorithm adapts to interpatient and inpatient variation in spike morphology. *Journal of neuroscience methods*, 210(2), 259-65.  
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4. Nonclercq, A., & **Mathys, P.** (2010). Quantification of Motion Artifact Rejection Due to Active Electrodes and Driven-Right-Leg Circuit in Spike Detection Algorithms. *IEEE transactions on biomedical engineering*, 57(11), 2746-2752. doi:10.1109/TBME.2010.2055867  
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5. Nonclercq, A., Foulon, M., Verheulpen, D., De Cock, C., Buzatu, M., **Mathys, P.**, & Van Bogaert, P. (2009, April). Spike detection algorithm automatically adapted to individual patients applied to spike-and-wave percentage quantification. *Neurophysiologie clinique*, 39(2), 123-131. doi:10.1016/j.neucli.2008.12.001  
[https://dipot.ulb.ac.be/dspace/bitstream/2013/226002/1/Elsevier\\_209629.pdf](https://dipot.ulb.ac.be/dspace/bitstream/2013/226002/1/Elsevier_209629.pdf)
6. Osee, M., Boey, C., Bairy, E., Robert, F., & **Mathys, P.** (2008, February). Pour bien commencer l'électronique: écoutez la radio! *Journal sur l'enseignement des sciences et technologies de l'information et des systèmes*, 7(HS 1). doi:10.1051/j3ea:2008007
7. Boey, C., Raman, V., Robert, F., & **Mathys, P.** (2006). Une plateforme logicielle interactive pour percevoir intuitivement le comportement temporel des circuits électriques et électroniques. *Journal sur l'enseignement des sciences et technologies de l'information et des systèmes*, 5(HS 2).
8. Nonclercq, A., Boey, C., Schaub, G., Robert, F., & **Mathys, P.** (2006). Illustration de problèmes de compatibilité électromagnétique (CEM). *Journal sur l'enseignement des sciences et technologies de l'information et des systèmes*, 5(HS 2).  
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9. De Cock, C., Nonclercq, A., Verheulpen, D., Foulon, M., **Mathys, P.**, & Jacquy, J. (2006). Relationship between the characteristics of slow-wave components and cognitive impairment in rolandic epilepsy (abstract). *Epilepsia*, *47*((S3)), 190-191.  
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10. Nonclercq, A., Verheulpen, D., De Cock, C., **Mathys, P.**, & Foulon, M. (2006). A new simultaneously objective and patient-specific spike and wave detection algorithm based on template matching (abstract). *Epilepsia*, *47*(S3), 9.  
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11. Robert, F., **Mathys, P.**, Velaerts, B., & Schauwers, J.-P. (2005, August). Two-dimensional analysis of the edge effect field and losses in high-frequency transformer foils. *IEEE transactions on magnetics*, *41*(8), 2377-2383. doi:10.1109/TMAG.2005.852938
12. Leroy, A., Robert, F., & **Mathys, P.** (2005). Simulation didactique interactive d'une jonction semi-conductrice. *Journal sur l'enseignement des sciences et technologies de l'information et des systèmes*, *4*(HS 2).
13. Nonclercq, A., Verheulpen, D., De Cock, C., **Mathys, P.**, & Foulon, M. (2005). A new spike-wave detection algorithm showing high sensitivity, low false positive rate and reduced computing time permits good detection of electrical status epilepticus during slow sleep (ESES) (abstract). *Epilepsia*, *46*(S6), 234.  
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14. De Groote, A., Groswasser, J., Bersini, H., **Mathys, P.**, & Kahn, A. (2002, June). Detection of obstructive apnea events in sleeping infants from thoracoabdominal movements. *Journal of sleep research*, *11*(2), 161-168.
15. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (2001, May). A closed-form formula for 2-D ohmic losses calculation in SMPS transformer foils. *IEEE transactions on power electronics*, *16*(3), 437-444. doi:10.1109/63.923777
16. Robert, F., **Mathys, P.**, & Velaerts, B. (2001). L'alimentation à découpage: principes et applications. *Revue E Tijdschrift*, *2*, 16-23.
17. Sackner, M. A., De Groote, A., Verbandt, Y., Paiva, M., & **Mathys, P.** (2001). Piezoelectric sensor vs. respiratory inductive plethysmograph. *Journal of applied physiology*, *90*, 403-404.
18. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (2000). Layer copper factor, although widely used and useful, has no theoretical base. *PESC Record - IEEE Annual Power Electronics Specialists Conference*, *3*, 1633-1638.
19. De Groote, A., Verbandt, Y., Paiva, M., & **Mathys, P.** (2000). Measurement of thoraco-abdominal asynchrony: importance of sensor sensitivity to cross section deformations. *Journal of applied physiology*, *88*, 1295-1302.

20. Robert, F., & **Mathys, P.** (1998). Ohmic losses calculation in SMPS transformers: Numerical study of Dowell's approach accuracy. *IEEE transactions on magnetics*, 34(4 PART 1), 1255-1257.
21. Bertha, F., Valaerts,, **Mathys, P.**, Tatakis, E., Wyns, A., bogaerts, D., & Miller, M. M. (1993). Improved power diode model for Pspice, applied to converter simulation. *IEE Conference Publication*, 2(377), 247-254.
22. Claessens, P., **Mathys, P.**, Bou Saada, J., & Colignan, (1993). Optimized, adaptive, reduced-order flux-observer. *IEE Conference Publication*, 4(377), 422-427.
23. Wyns, A., bogaerts, D., Van Eck, J.-L., & **Mathys, P.** (1993). PSPICE simulations and 3D-PCB transformers for ZVS full bridge converters. *IEE Conference Publication*, 3(377), 208-215.
24. Velaerts, B., & **Mathys, P.** (1991, October). Microcontroller-based Multi-mode 3-Level Pulse-Width-Modulation. *E P E Journal*, 1(2), 133-138.
25. **Mathys, P.**, & Van Eck, J.-L. (1991, July). Specific Integrated Circuits for Power Electronics. *E P E Journal*, 1(1), 61-66.
26. **Mathys, P.** (1988). Commande numérique des machines asynchrones en vitesse variable - 2ème partie. *Revue E Tijdschrift*, 104(1/1), 41-54.
27. Velaerts, B., **Mathys, P.**, Tatakis, E., & Bingen, G. (1988). Novel approach to the generation and optimization of three-level PWM wave forms. *PESC Record - IEEE Annual Power Electronics Specialists Conference*, 1255-1262.
28. **Mathys, P.** (1987). Commande numérique des machines asynchrones en vitesse variable - 1ère partie. *Revue E Tijdschrift*, 103(1/2), 51-59.
29. Koulischer, J., **Mathys, P.**, & Bingen, G. (1986). COMPUTER-AIDED CHOICE OF DIGITAL PWM STRATEGIES. *PESC Record - IEEE Annual Power Electronics Specialists Conference*, 49-57.

#### 4. Articles published in conference proceedings

1. Lonys, L., Vanhoestenbergh, A., Huberty, V., Hiernaux, M., Cauche, N., Julemont, N., Debelle, A., Huberland, F., Acuna Otarola, V., Godfraind, C., Devière, J., Delchambre, A., **Mathys, P.**, & Nonclercq, A. (2016, June 10). Design and implementation of a less invasive gastrostimulator. *Proceedings of the IFESS Annual Conference*.
2. Lonys, L., Vanhoestenbergh, A., Huberty, V., Hiernaux, M., Cauche, N., Julemont, N., Devière, J., **Mathys, P.**, & Nonclercq, A. (2013). A first prototype of an endoscopically implantable gastrostimulator. *Proceedings of the IFESS Annual Conference. 18th Annual International FES Society Conference* (pp. 1-3).  
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3. Lonys, L., Vanhoestenberghé, A., Devière, J., Julemont, N., Huberty, V., Cauche, N., Hiernaux, M., **Mathys, P.**, & Nonclercq, A. (2013). An endoscopically implantable gastric stimulator. *12th Belgian Day on Biomedical Engineering – joint meeting with IEEE EMBS Benelux Chapter* (p. 1).  
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4. Osee, M., Robert, F., & **Mathys, P.** (2011, September 01). A digital platform for real-time simulation of power converters with high switching frequency. *Power Electronics and Applications (EPE 2011), Proceedings of the 2011-14th European Conference on*.
5. Lonys, L., Hiernaux, M., Cauche, N., Devière, J., Vanhoestenberghé, A., **Mathys, P.**, & Nonclercq, A. (2011). Challenges for the design of an endoscopically implanted electrostimulator. *Proceedings of the IFESS Annual Conference* (pp. 1-3).  
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6. Lonys, L., **Mathys, P.**, & Nonclercq, A. (2011). Human energy harvesting used for endoscopic implant power supply. *Proceedings of ISB2011* (pp. 1-2).  
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7. Lonys, L., Delchambre, A., **Mathys, P.**, & Nonclercq, A. (2010). Human energy harvesting used for endoscopic implant power supply. *Proceedings of Belgian Day on Biomedical Engineering* (p. 1).  
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8. Anthony, A., Jaumain, M., Penelle, B., Warzée, N., **Mathys, P.**, & Nonclercq, A. (2010). Electromyogram pattern recognition in neurophysiology and physiotherapy. *Proceedings of Belgian Day on Biomedical Engineering* (p. 1).  
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9. Jaumain, M., Osee, M., Richard, A., Vander Biest, A., & **Mathys, P.** (2007, September 03). Educational simulation of the RiSC processor. *Proc. ICEE (International Conference on Engineering Education), 03-07/09/07, Coimbra (Portugal)*.
10. Boey, C., Bairy, E., Robert, F., & **Mathys, P.** (2006). Un dispositif d'évaluation mixte (formative/sommative) efficace et perçu positivement par les étudiants dans le cadre de laboratoires en sciences de l'ingénieur. *Actes des 8e Biennale internationale de l'Education et de la Formation*.
11. Nonclercq, A., Verheulpen, D., De Cock, C., **Mathys, P.**, & Foulon, M. (2006). A new, simultaneously objective and patient-specific, spike and wave detection algorithm based on template matching. *Proceedings of 7th European Congress on Epileptology: Vol. 32* (pp. 123-131).  
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12. De Cock, C., Nonclercq, A., Verheulpen, D., Foulon, M., **Mathys, P.**, & Jacquy, J. (2006). Relationship between the characteristics of slow-wave components and cognitive impairment in rolandic epilepsy. *Proceedings of 7th European Congress on Epileptology Helsinki, Finland* (pp. 1-2).  
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13. Nonclercq, A., Boey, C., Schaub, G., Robert, F., & **Mathys, P.** (2005). Illustration de problèmes de compatibilité électromagnétique (CEM). *Actes du 5ème Colloque sur l'Enseignement des Technologies et des Sciences de l'Information et des Systèmes* (pp. 1-6).  
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14. Robert, F., Sprooten, J., **Mathys, P.**, Schauwers, J.-P., & Velaerts, B. (2005). Eddy current losses in SMPS transformers round wire windings: a semi-analytical closed-form formula. *Proceedings of the 11th European Conference on Power Electronics and Applications*.
15. Nonclercq, A., Verheulpen, D., De Cock, C., **Mathys, P.**, & Foulon, M. (2005). A new spike-wave detection algorithm showing high sensitivity, low false positive rate and reduced computing time permits a good detection of electrical status epilepticus during slow sleep (ESES). *Proceedings of 26th International Epilepsy Congress* (p. 1).  
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16. Nonclercq, A., & **Mathys, P.** (2005). High resolution wave generator permits test and calibration of medical instrumentation devices. *Proceedings of 3rd IFMBE European Conference on Biomedical Engineering* (pp. 1-5).  
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17. Nonclercq, A., & **Mathys, P.** (2004). Reduction of power line interference using active electrodes and a driven-right-leg circuit in electroencephalographic recording with a minimum number of electrodes. *Conf Proc IEEE Eng Med Biol Soc.* (pp. 2247-2250).  
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18. Nonclercq, A., & **Mathys, P.** (2004). Characterisation of the electrodes used in the EEG. *Proceedings of Forum URSI* (p. 1).  
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19. Nonclercq, A., & **Mathys, P.** (2004). Design of a DC-coupled amplifier for biological measurements based on a Sallen-Key filter. *Proceedings of Belgian Day on Biomedical Engineering* (p. 1).  
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20. Nonclercq, A., Driessens, E., Adams, S., & **Mathys, P.** (2003). New strategies of acquisition and processing of encephalographic potentials. *Proceedings of Forum URSI* (p. 1).

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New\\_strategies\\_of\\_acquisition\\_and\\_processing.pdf](https://dipot.ulb.ac.be/dspace/bitstream/2013/70868/1/New_strategies_of_acquisition_and_processing.pdf)

21. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (2002, August 07). Simultaneous analysis of harmonics and 2D effects on the optimal thickness of transformer windings. *Digest of Technical Papers INTERMAG Europe 2002* (p. 3). IEEE.
22. COLASSE, A. A., Delporte, L., MASSELUS, J.-E. J.-E., Osee, M., & **Mathys, P.** (2001, September 03). Symetrisation of asymetrical short-circuits in IGBT drives. *Proc. 9th European Conference on Power Electronics and Applications*.
23. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (2001). Eddy current losses in SMPS transformers: a full-frequency-range review of 2D effects inside the windings. *Proceedings of the European Power Electronics and Applications Conference* (p. 10).
24. Robert, F., **Mathys, P.**, Schauwers, J.-P., & Velaerts, B. (2001). Copper losses and power density of power transformer technologies. *Proc. 23rd International telecommunications Energy Conference INTELEC 2001* (pp. 73-80).
25. Schauwers, J.-P., Velaerts, B., Robert, F., & **Mathys, P.** (2000). Modélisation et simulation de transformateurs: application aux transformateurs planaires. *Actes du Congrès SIMTEC* (p. 10).
26. BODSON, J.-M. J.-M., Bou Saada, J., COLASSE, A. A., Delporte, L., MASSELUS, J.-E. J.-E., **Mathys, P.**, & Osee, M. (1999, September 07). ONIX3000 : an IGBT propulsion drive directly coupled to the 3kV catenary for railway application. *Proc. 8th European Conference on Power Electronics and Applications*.
27. BODSON, J.-M. J.-M., Bou Saada, J., COLASSE, A. A., Colignon, P. P., MASSELUS, J.-E. J.-E., **Mathys, P.**, & Osee, M. (1999, September 07). Study of direct series connection of IGBT for a 3kV chopper. *Proc. 8th European Conference on Power Electronics and Applications*.
28. Bou Saada, J., Delporte, L., Colignon, P. P., Thomas, P. P., **Mathys, P.**, & Osee, M. (1999, September 07). High power factor, high efficiency bi-directional GTO rectifier for locomotive application (2nd part). *Proc. 8th European Conference on Power Electronics and Applications*.
29. Schauwers, J.-P., Nunes, C., Velaerts, B., Robert, F., & **Mathys, P.** (1999). Planar transformer technology applied to AC/DC conversion. *Proceedings of the INTELEC Conference* (p. 5).
30. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (1999). Advanced guidelines and optimization tools for foil conductors design in SMPS transformers. *Proceedings of the European Power Electronics and Applications Conference* (p. 8).
31. Robert, F., **Mathys, P.**, & Schauwers, J.-P. (1998). Ohmic losses calculation in SMPS transformers: numerical study of Dowell's approach accuracy. *Proceedings of the 7th Joint MMM-Intermag Conference* (p. 3).

32. Bou Saada, J., Colignon, P. P., Thomas, P. P., Avaux, F., Delporte, L., & **Mathys, P.** (1997). High Power factor High efficiency bidirectional GTO rectifiers for locomotif application. *Proc. 7th European Conference on Power Electronics and Applications: Vol. 4* (pp. 298-304). EPE Association.
33. bogaerts, D., George, N., & **Mathys, P.** (1995). Intelligent energy systems for telecommunications. *Proc. 17th International Telecommunications Energy Conference* (pp. 203-206).
34. Velaerts, B., Schauwers, J.-P., bogaerts, D., Miller, M., **Mathys, P.**, & Van Eck, J.-L. (1995). Multi-resonant techniques applied to a family of single-output DC-DC converters. *Proc. 6th European Conference on Power Electronics and Applications: Vol. 2* (pp. 612-617).
35. Bertha, F., Velaerts, B., **Mathys, P.**, Tatakis, E., Wijns, A., bogaerts, D., & Miller, M. (1993). An improved power diode model for PSPICE applied to converter simulation. *Proc. 5th European Conference on Power Electronics and Applications: Vol. 2* (pp. 249-254). EPE Association.
36. Wijns, A., bogaerts, D., Van Eck, J.-L., & **Mathys, P.** (1993). PSPICE simulations and 3-D PCB transformers for ZVS full-bridge converter. *Proc. 5th European Conference on Power Electronics and Applications: Vol. 3* (pp. 208-215). EPE Association.
37. Claessens, P., **Mathys, P.**, & Bou Saada, J. (1993). An optimized, adaptative, reduced order flux observer. *Proc. 5th European Conference on Power Electronics and Applications: Vol. 4* (pp. 422-427). EPE Association.
38. Velaerts, B., & **Mathys, P.** (1991). Study of 2 and 3-level Precalculated Modulations. *Proc. 4th European Conference on Power Electronics and Applications: Vol. 3* (pp. 228-234). EPE Association.
39. Velaerts, B., **Mathys, P.**, & Bingen, G. (1989). New developments of 3-level PWM strategies. *Proc. 3rd European Conference on Power Electronics and Applications* (pp. 411-416). EPE Association.
40. Velaerts, B., **Mathys, P.**, Tatakis, E., & Bingen, G. (1988). A novel approach to the generation and optimization of three-level PWM wave forms. *Proc. PESC'88 IEEE Power Electronics Specialists Conference* (pp. 0-3).
41. Bingen, G., Koulischer, J., & **Mathys, P.** (1986). Computer aided choice of digital PWM strategies. *Proc. Power Electronics Specialists Conference* (pp. 49-57).
42. Koulischer, J., & **Mathys, P.** (1985). Modulateur numérique à hautes performances pour onduleurs à transistors de puissance. *Proc. 1st European Conference on Power Electronics and Applications: Vol. 2* (pp. 105-111). EPE Association.
43. **Mathys, P.**, Maggetto, G., & Van Eck, J.-L. (1983). Performances d'un modulateur à microprocesseur pour onduleur MLI. *Actes du colloque international sur la commande et la régulation numériques des machines électriques 1983 toulouse: Vol. II* (pp. 52-59).

44. Maggetto, G., Van Eck, J.-L., **Mathys, P.**, & Van Dooren, Y. (1982). Application des techniques digitales à la commande de chaînes de traction à moteurs asynchrones. *Proc. Drive Electric 82* (pp. 509-519).
45. **Mathys, P.** (1982). Microprocessor based multimode synchronous pulse width modulation. *Proc. Microelectronics in Power electronics and Electrical Drives* (pp. 237-242).
46. **Mathys, P.** (1981). Prom based modulator for an inverter fed asynchronous machine drive. *Proc. 4th Power Electronics Conference: Vol. II* (pp. 51-59).
47. Maggetto, G., Van Eck, J.-L., Broucke, A., & **Mathys, P.** (1981). Battery chargers for commercial electric vehicles, a comparison of different solutions. *Proc. Electric Vehicle 81*.
48. **Mathys, P.**, Kirschen, D., Maggetto, G., & Van Eck, J.-L. (1980). Modulateur digital pour un onduleur à thyristors ultra-rapides. *Actes du colloque international sur la commande et la régulation numériques des machines électriques: Vol. II* (pp. 22-30).
49. Maggetto, G., Van Eck, J.-L., Debacker, H., Moortgat, D., Meyers, R., & **Mathys, P.** (1980). Brussels Electric Vehicle Experiment. *Proc. Drive Electric 80*.

## 5. Oral presentations during conferences, which include a review committee

1. **Mathys, P.** (1996). *Les bus de terrain : concept général et évolution*. Paper session presented at SRBE Société Royale Belge des Electriciens (1996: Bruxelles).
2. **Mathys, P.** (1994). *Analog Simulation with PSPICE for the design of switch-mode power supplies*. Paper session presented at Semaine de la Technologie de la Région Wallonne (1994: Wavre).
3. **Mathys, P.** (1993). *Les besoins en communication des capteurs et actionneurs intelligents - Présentation succincte des différents réseaux de terrain*. Paper session presented at AIM93 (1993: Liège).
4. **Mathys, P.** (1990). *Appareillages de test à microprocesseur pour auto-adhésifs*. Paper session presented at ISIL (1990: Liège).
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