



## Spotlight on EMF Research

# Literaturliste 2024/4 (10.2024 bis 12.2024)

Dies ist die Liste der zwischen Oktober 2024 und Dezember 2024 gesichteten Publikationen, aus denen Artikel ausgewählt wurden, um sie im Rahmen von „Spotlight on EMF Research“ zu besprechen. Die Liste ist nach Kategorien (= Frequenzbereichen, Studiendesign) und anschließend nach Namen sortiert. Die Zahl in Klammern gibt die Menge der Publikationen in der jeweiligen Kategorie an.

Informationen über „Spotlight on EMF Research“ finden Sie auf der BfS-Homepage.

This is the list of publications screened between October 2024 and December 2024, from which we selected articles to be reviewed in our „Spotlight on EMF Research“ series. The list is sorted by category (= frequency range, study design) and on a second level by name. The number of publications in a specific category is given in parantheses.

Please find more information on „Spotlight on EMF Research“ on the BfS website.

## Inhalt

across frequencies, animal study (1).....	2
across frequencies, dosimetry/exposure (3).....	2
across frequencies, epidemiology (1).....	3
across frequencies, review (2).....	3
across frequencies, theory/molecular mechanism (4).....	3
low frequency, animal study (13).....	3
low frequency, dosimetry/exposure (13).....	5
low frequency, epidemiology (3).....	6
low frequency, human study (1).....	6
low frequency, in vitro study (12).....	7
low frequency, plant study (7).....	8
low frequency, review (5).....	9
low frequency, theory/molecular mechanism (7).....	9



radiofrequency, animal study (17) .....	10
radiofrequency, dosimetry/exposure (41) .....	12
radiofrequency, epidemiology (4) .....	16
radiofrequency, human study (5) .....	16
radiofrequency, in vitro study (8) .....	17
radiofrequency, plant study (5) .....	18
radiofrequency, review (11) .....	18
radiofrequency, theory/molecular mechanism (2) .....	20

## across frequencies, animal study (1)

Vieceli AS, Silveira PCL, Zaccaron RP, Fonseca MCR, Aguiar-Junior AS, Neves L, Kuriki HU, Barbosa RI and Marcolino AM. **Influence of photobiomodulation and radiofrequency on the healing of pressure lesions in mice.** *Lasers in Medical Science.* 2024;39(1):280.  
<https://doi.org/10.1007/s10103-024-04226-5>

## across frequencies, dosimetry/exposure (3)

Kodera S, Kimura S, Uehara S, Yuasa A, Ushizawa K, Otaka Y and Hirata A. **Estimating the Perception Threshold of Electrostimulation and Heating for Radiofrequency Contact Current.** *IEEE Transactions on Electromagnetic Compatibility.* 2024;eFIRST-2024-11:1-9.  
<https://doi.org/10.1109/temc.2024.3483168>

Li J, Liu X, Ma F and Ansari N. **EMR Safety in Multiple Wireless Chargers Powered IoT Networks.** *IEEE Wireless Communications Letters.* 2024;eFIRST-2024-11:1-1.  
<https://doi.org/10.1109/lwc.2024.3503762>

Tell RA and Kavet R. **An Alternative Approach for Evaluating Induced and Contact Currents for Compliance with Their Exposure Limits (100 kHz to 110 MHz) in IEEE Std C95.1-2019.** *Health Physics.* 2024;eFIRST-2024-11.  
<https://doi.org/10.1097/HP.0000000000001902>



## across frequencies, epidemiology (1)

Watten RG, Volden F and Trå HV. **Sensory Processing Sensitivity, and Not Gender, Drives Electromagnetic Hypersensitivity and Nature Connection.** *Ecopsychology*. 2024;eFIRST-2024-11. <https://doi.org/10.1089/eco.2024.0027>

## across frequencies, review (2)

Abtin S, Seyedaghamiri F, Aalidaeijavadi Z, Farrokhi AM, Moshrefi F, Ziveh T, Zibaii MI, Aliakbarian H, Rezaei-Tavirani M and Haghparast A. **A review on the consequences of molecular and genomic alterations following exposure to electromagnetic fields: Remodeling of neuronal network and cognitive changes.** *Brain Research Bulletin*. 2024;217:111090. <https://doi.org/10.1016/j.brainresbull.2024.111090>

Verhelst P, Pauwels I, Pohl L, Reubens J, Schilt B and Hermans A. **Electromagnetic fields and diadromous fish spawning migration: An urgent call for knowledge.** *Marine Environmental Research*. 2024;204:106857. <https://doi.org/10.1016/j.marenvres.2024.106857>

## across frequencies, theory/molecular mechanism (4)

Antill LM and Vatai E. **RadicalPy: A Tool for Spin Dynamics Simulations.** *Journal of Chemical Theory and Computation*. 2024;eFIRST-2024-10. <https://doi.org/10.1021/acs.jctc.4c00887>

Chen XY, Liu HB and Cai JM. **Identifying a possible mechanism for the quantum needle in chemical magnetoreception.** *Physical Review A*. 2024;110(4):042220. <https://doi.org/10.1103/PhysRevA.110.042220>

Guo Q, Gou D, Zhao C, Ma Y, Chen C and Zhu J. **Influence of Electrostatic Field on Optical Rotation of D-Glucose Solution: Experimental Research for Electric Field-Induced Biological Effect.** *Molecules*. 2024;29(20):4898. <https://doi.org/10.3390/molecules29204898>

Ma T, Mou J and Chen WZ. **Dynamics and implementation of a functional neuron model with hyperchaotic behavior under electromagnetic radiation.** *Chaos Solitons & Fractals*. 2025;190:115795. <https://doi.org/10.1016/j.chaos.2024.115795>

## low frequency, animal study (13)

Chen S, Wei W, Wang Z, Zhu J, Zhang H, Wang G, Guo N, Li J, Mu Y, Zhang N and Li Z. **Extremely low-frequency electromagnetic fields targeting spleen modifies the populations of immunocytes in the spleen.** *Bioelectromagnetics*. 2025;46(1):e22532. <https://doi.org/10.1002/bem.22532>



Donazar-Aramendia I, Reyes-Martinez MJ, Megina C, Florido M and Garcia-Gomez JC. **Assessing the effects of electromagnetic fields generated by submarine power cables on the soft-bottom community: An ecological in-situ study.** *Environmental Research*. 2024;266:120573. <https://doi.org/10.1016/j.envres.2024.120573>

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Grob R, Wegmann JW, Rossler W and Fleischmann PN. **Cataglyphis ants have a polarity-sensitive magnetic compass.** *Current Biology*. 2024;34(24):5833-5838.e5832. <https://doi.org/10.1016/j.cub.2024.11.012>

Guillebon C, Perrichon P, Browman HI, Cresci A, Sivle LD, Skiftesvik AB, Zhang G and Durif CMF. **Effects of anthropogenic electromagnetic fields used for subsurface oil and gas exploration (controlled-source electromagnetics, CSEM) on the early development of Atlantic haddock (*Melanogrammus aeglefinus*).** *Marine Pollution Bulletin*. 2024;211:117425. <https://doi.org/10.1016/j.marpolbul.2024.117425>

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Klimek A, Kletkiewicz H, Siejka A, Wyszowska J, Maliszewska J, Klimiuk M, Jankowska M and Rogalska J. **The extremely low-frequency electromagnetic field (50 Hz) can establish a new "set-point" for the activity of the locus coeruleus-noradrenergic (LC-NA) system in rat.** *Brain Research Bulletin*. 2024;219:111111. <https://doi.org/10.1016/j.brainresbull.2024.111111>

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Diao Y, Rashed EA, Giaccone L, Laakso I, Li C, Scorretti R and Hirata A. **Effect of the Conductivity Variations on Computed Electric Field Induced in Learning-Based Models.** *IEEE Access*. 2024;12:188454-188464. <https://doi.org/10.1109/access.2024.3514710>

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Loizeau N, Haas D, Zahner M, Stephan C, Schindler J, Gugler M, Frohlich J, Ziegler T and Roosli M. **Extremely low frequency magnetic fields (ELF-MF) in Switzerland: From exposure monitoring to daily exposure scenarios.** *Environment International.* 2024;194:109181. <https://doi.org/10.1016/j.envint.2024.109181>

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Soyka F, Tarnaud T, Altekoster C, Schoeters R, Plovie T, Joseph W and Tanghe E. **Action potential threshold variability for different electrostimulation models and its potential impact on occupational exposure limit values.** *Bioelectromagnetics.* 2025;46(1):e22529. <https://doi.org/10.1002/bem.22529>

Vuckovic J, Gurhan H, Gutierrez B, Guerra J, Kinsey LJ, Nava I, Fitzpatrick A, Barnes FS, Tseng KA and Beane WS. **Construction and Application of a Static Magnetic Field Exposure Apparatus for Biological Research in Aqueous Model Systems and Cell Culture.** *Bio-Protocol.* 2024;14(19):e5077. <https://doi.org/10.21769/BioProtoc.5077>

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Juutilainen J, Khan MW, Naarala J and Roivainen P. **Magnetic fields from indoor transformer stations and risk of cancer in adults: a cohort study.** *Occupational and environmental medicine.* 2024;eFIRST-2024-11. <https://doi.org/10.1136/oemed-2024-109466>

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## low frequency, human study (1)

Hayashi M, Kida T and Inui K. **Segmentation window of speech information processing in the human auditory cortex.** *Scientific Reports.* 2024;14(1):25044. <https://doi.org/10.1038/s41598-024-76137-y>



## low frequency, in vitro study (12)

Beck CL, Kirby AM, Roberts S and Kunze A. **Multimodal Characterization of Cortical Neuron Response to Permanent Magnetic Field Induced Nanomagnetic Force Maps.** *ACS Nano*. 2024;eFIRST-2024-12. <https://doi.org/10.1021/acsnano.4c09542>

Mata P, Calovi S, Benli KP, Iglesias L, Hernandez MI, Martin A, Perez-Samartin A, Ramos-Murguialday A, Domercq M and Ortego-Isasa I. **Magnetic field in the extreme low frequency band protects neuronal and microglia cells from oxygen-glucose deprivation.** *Frontiers in Cellular Neuroscience*. 2024;18:1455158. <https://doi.org/10.3389/fncel.2024.1455158>

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Ryu Y, Wague A, Liu X, Feeley BT, Ferguson AR and Morioka K. **Cellular signaling pathways in the nervous system activated by various mechanical and electromagnetic stimuli.** *Frontiers in Molecular Neuroscience*. 2024;17:1427070. <https://doi.org/10.3389/fnmol.2024.1427070>

Sabo M and Kopani M. **Computational study of endogenous magnetic particles' effect on action potential processing in a Purkinje cell model.** *Bratislavske Lekarske Listy*. 2024;125(12):766-774. [https://doi.org/10.4149/BLL\\_2024\\_117](https://doi.org/10.4149/BLL_2024_117)

Shibata T, Ihara D, Kirihara Y, Yagi T, Tabuchi A and Kuroda S. **Expression of c-fos in cortical neuron cultures under dynamic magnetic field is not suppressed by calcium channel blockers.** *Drug Discoveries & Therapeutics*. 2024;eFIRST-2024-12. <https://doi.org/10.5582/ddt.2024.01077>

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Zironi I, Cramer T, Fuschi A, Cioni M, Guerra G, Giuliani G, Calienni M, Caramazza L, Liberti M, Apollonio F, Remondini D and Castellani G. **Enhancing cell motility via non-contact capacitively coupled electrostatic field.** *Scientific Reports*. 2024;14(1):28085. <https://doi.org/10.1038/s41598-024-77384-9>

## low frequency, plant study (7)

González AM, Morcillo AD, Martínez ML, Temnani A, Reyes PB and García SZ. **The Impact of Low and Medium Intensity Electromagnetic Field Exposure on Pepper Seed Germination.** *IEEE Access*. 2024;12:152087-152096. <https://doi.org/10.1109/access.2024.3479449>

Herman G, Gantner R, Guberac V, Antunovic M and Bukvic G. **Effect of Magnetic Field on Growth and Protein Concentration in Aboveground Herbage of Field Pea (*Pisum Sativum L.*) Cultivars.** *Romanian Reports in Physics*. 2024;76(4):709. <https://doi.org/10.59277/RomRepPhys.2024.76.709>

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Qian J, Lu D, Zhang Z, Chen D, Zhao F, Huo S, Wang F, Ma H and Kan J. **Effect of low-frequency alternating magnetic field on exopolysaccharide production and antioxidant capacity of *Pleurotus citrinopileatus* by submerged fermentation.** *International microbiology : the official journal of the Spanish Society for Microbiology*. 2024;eFIRST-2024-10. <https://doi.org/10.1007/s10123-024-00604-9>

Torres-Osorio J, Villa-Carmona E and Zamorano-Montanez C. **Physiological efficiency during the vegetative stage of tomato crops developed from magnetically treated seeds.** *Heliyon*. 2024;10(22):e40426. <https://doi.org/10.1016/j.heliyon.2024.e40426>





Wei L, Wang J, Zhou X, Guo S, Zhou S, Wei J, Yang N, Luo Y, Xu X and Jin Y. **Effect of magnetic field treatment on the softening of green chilies (*Capsicum annuum* L.) during storage.** *Food Research International*. 2024;196:115124. <https://doi.org/10.1016/j.foodres.2024.115124>

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## low frequency, review (5)

Guzman-Armenteros TM, Ruales J and Ramos-Guerrero L. **A Review of Electromagnetic Fields in Cellular Interactions and Cacao Bean Fermentation.** *Foods (Basel, Switzerland)*. 2024;13(19):3058. <https://doi.org/10.3390/foods13193058>

Henshaw DL and Philips A. **A mechanistic understanding of human magnetoreception validates the phenomenon of electromagnetic hypersensitivity (EHS).** *International journal of radiation biology*. 2024;eFIRST-2024-12:1-19. <https://doi.org/10.1080/09553002.2024.2435329>

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## low frequency, theory/molecular mechanism (7)

Deser A, Kuhne J and Leymann HAM. **Numerical and analytical inspection of magnetic field effects in the radical pair mechanism by a simplified rate equation model.** *Bioelectromagnetics*. 2024;45(8):399-405. <https://doi.org/10.1002/bem.22528>

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Panagopoulos DJ, Karabarbounis A and Chrousos GP. **Biophysical mechanism of animal magnetoreception, orientation and navigation.** *Scientific Reports.* 2024;14(1):30053. <https://doi.org/10.1038/s41598-024-77883-9>

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## radiofrequency, animal study (17)

Ivanova EP, Nguyen THP, Linklater DP, Le PH, Vilagosh Z, Perera PGT, Appadoo DRT, Vongsvivut J, Sharma T, Leeming MG, Williamson NA, Hanssen E, Dekiwadia C, Tobin MJ, Juodkazis S and Croft RJ. **Adaptations of Escherichia coli K 12 to Synchrotron Sourced THz Radiation.** *ACS Omega.* 2024;9(50):49878-49886. <https://doi.org/10.1021/acsomega.4c08710>

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