For the attention of interested partners and potential investors

The contributions of Biomagnetik Park for

global breakthrough of quantum sensing based magnetocardiography (MCG) 2022 – 2025

We will lead the next megatrend, see Bongs et al. Nature May 2023:
Quantum sensors will start a revolution – if we deploy them right

BASIC ALGORITHM TECHNOLOGY OF BMP

In the last 48 months bmp has made major progress with its data and basic algorithm technology:

- Improvement of all bmp algorithms by using novel parameters based on recent findings

- Global attention of the results achieved with first-class partners

- Preparation of the QuantumCardiology-AI deep learning project

- Three major new publications (Nov 2025 – Jan 2026) demonstrating breakthrough results in AI-driven MCG diagnostics

NEW PUBLICATIONS ON BREAKTHROUGHS IN AI 2025/2026

BeatMagHeart – Whitepaper

Bannasch et al., November 2025, PrePrint

Comprehensive white paper on BeatMagHeart analysis of raw magnetocardiography data generated at clock frequencies of 500 and 1000 Hz.

https://archive.org/details/beat-mag-heart-whitepaper-en-02-sb

Deep Learning Enhanced MCG – Multi-Task Detection

Kranz et al., December 2025, PrePrint (medRxiv)

MCG2Vec: a self-supervised deep learning framework for detection of coronary artery disease (AUC 0.85), reduced left ventricular ejection fraction (AUC 0.81), and arrhythmia risk from resting MCG recordings. Based on 1,732 patients by Humboldt University Berlin, Charité Berlin, and Medical School Berlin.

https://www.medrxiv.org/content/10.64898/2025.11.30.25341301v1

MCG Signal Analysis – Novel Diagnostic Approach

Mockler et al., January 2026, PrePrint

Advancing MCG signal processing with novel analytical methods for improved cardiovascular diagnostics.

https://archive.org/details/ch-24-2177/CH-24-2177.pdf

INFORMATION ON DIAGNOSTIC BREAKTHROUGHS 2022-2025

POST-COVID DISEASE DETECTION

Sensitivity of 87.5% – determined by a recent pilot study at Charité Berlin. Benefits for research into the causes of PCD and the development of effective therapies. Please request Teaser "PCD Diagnosis 2023 Nov".

PREDICTION OF SUDDEN CARDIAC DEATH

Accuracy of 90.9% for patients with acute chest pain based on 191 endpoints (MCG datasets of Yonsei Seoul); publication in Frontiers in Cardiovascular Medicine, 2023 Dec, EU-patent pending.

MYOCARDITIS DIAGNOSTICS

Specificity of 95.0%; Charité publication in Journal of the American Heart Association, 2023 Feb, US patent pending.

MAGNETOIONOGRAPHY (MIG)

Enhances diagnostic accuracy of MCG in coronary artery disease: sensitivity from 90.3% to 93.5% and specificity from 76.5% to 85.3%. See Nature Scientific Reports, Aug 2025.

IMPORTANT NEW PENDING PATENTS

The following particularly important new patent applications (pending) are publicly available:

Method for the magnetocardiographic characterization of at least a portion of a heartbeat cycle
pending since 2022; rejected 2025 because MIG was interpreted as a description law of nature by the authorities in the US and the EU.
https://patents.google.com/patent/EP4491119A1/en

Diagnostics myocarditis with magnetocardiography
50:50 bmp-Charité, pending since 2023
https://patents.google.com/patent/WO2024110599A1/en?oq=EP2023082887

Prognosis of sudden cardiac death
50:50 Yonsei University-bmp, pending since 2023
https://patents.google.com/patent/WO2025012447A1/en?oq=EP2024069871

LINK-LIST OF PUBLICATIONS OF THE LAST 48 MONTHS

★ BeatMagHeart – Whitepaper

PrePrint, 2025 November

https://archive.org/details/beat-mag-heart-whitepaper-en-02-sb

★ Deep learning enhanced magnetocardiography enables multi-task detection of coronary, ventricular, and rhythm disorders

medRxiv, PrePrint, 2025 December

https://www.medrxiv.org/content/10.64898/2025.11.30.25341301v1

★ MCG Signal Analysis – Novel Diagnostic Approach

PrePrint, 2026 January

https://archive.org/details/ch-24-2177/CH-24-2177.pdf

Magnetoionography enhances diagnostic accuracy of magnetocardiography in coronary artery disease

Nature: Scientific Reports, 2025 August

https://www.nature.com/articles/s41598-025-14054-4

Application of Artificial Intelligence on Magnetocardiology

Clinical Hemorheology and Microcirculation, accepted 2024 June

The Inflammatory Spectrum of Cardiomyopathies

Frontiers Cardiovascular Medicine, 2024 January

Magnetocardiography at rest predicts cardiac death in patients with acute chest pain

Frontiers Cardiovascular Medicine, 2023 December

Cardiac magnetic field map topology quantified by Kullback–Leibler entropy identifies patients with clinically suspected myocarditis

Frontiers Cardiovascular Medicine, 2023 November

Case report: Recurrence of inflammatory cardiomyopathy detected by magnetocardiography

Frontiers Cardiovascular Medicine, 2023 September

Case report: Magnetocardiography as a potential method of therapy monitoring in amyloidosis

Frontiers Cardiovascular Medicine, 2023 August

Magnetocardiography for the detection of myocardial ischemia

Frontiers Cardiovascular Medicine, 2023 July

Application of Magnetocardiography to Screen for Inflammatory Cardiomyopathy and Monitor Treatment Response

JAHA, 2023 February

Further fundamental publications are in preparation or in the review process.

VALID APPROVALS AND VALID AND PENDING PATENTS BEFORE 2022

Valid FDA 510k clearance as a clinical research device (USA), 2013

https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm?ID=K121825

Patent Monopolarity index as basis bmp basic algorithm (EU), granted 2019

https://patents.google.com/patent/EP3308703B1/de

Patent Vector MCG as basis bmp basic algorithm (EU), pending

https://patents.google.com/patent/EP3207866A1/en

Patent non-magnetic ergometer for CMF measurements under stress (USA, KR, HK, EU), granted 2016-18

https://patents.justia.com/patent/10004412

Please request for complete list

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