Super-resolution, ultrafast and deeply-learned contrast ultrasound imaging of the vascular tree.

**Fact Sheet**

**Project Information**

**Super-FALCON**

Grant agreement ID: 101076844

**DOI**

10.3030/101076844

**Funded under**

European Research Council (ERC)

**Total cost**

€ 1 500 000,00

**EU contribution**

€ 1 500 000,00

**Start date**

1 April 2023

**End date**

31 March 2028

**Coordinated by**

UNIVERSITEIT TWENTE

Netherlands

**Project description**

**From sound waves to bubble dynamics**

Diagnostic ultrasound uses high-frequency sound waves to produce internal images of the body. For cardiovascular diseases and cancer, imaging vasculature and flow is key to overcoming current hurdles in diagnosis and treatment. However, current clinical imaging modalities still provide insufficient spatiotemporal resolution. To address this issue, the ERC-funded Super-FALCON project will harness the nonlinear dynamics of novel contrast agents: monodisperse microbubbles. Using deep learning and GPU-accelerated simulations, it will recover super-resolved bubble cloud images. The project will also elaborate a new model for confined bubbles and use them as nonlinear sensors for capillary imaging. The goal is to

**Fields of science**

natural sciences > physical sciences > optics > microscopy > super resolution microscopy  
medical and health sciences > clinical medicine > cardiology > cardiovascular diseases  
engineering and technology > electrical engineering, electronic engineering, information engineering > electronic engineering > sensors  
natural sciences > computer and information sciences > artificial intelligence > machine learning > deep learning  
natural sciences > physical sciences > acoustics > ultrasound

**Programme(s)**

HORIZON.1.1 - European Research Council (ERC)  

**Topic(s)**

ERC-2022-STG - ERC STARTING GRANTS

**Call for proposal**

ERC-2022-STG  

See other projects for this call

**Funding Scheme**

ERC - Support for frontier research (ERC)

**Coordinator**

UNIVERSITEIT TWENTE
Net EU contribution

€ 1 500 000,00

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Region

Oost-Nederland > Overijssel > Twente

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation
Website
Participation in EU R&I programmes
HORIZON collaboration network

Other funding

€ 0,00

EC signature date 8 December 2022
Last update: 16 December 2022

Permalink: https://cordis.europa.eu/project/id/101076844

European Union, 2023