

# Licensing Opportunity



technology transfer

Partner for an Innovative World

## 3D Motion-Resolved Free-Running MRI Acquisition of the Eye and Head

Patient's uncontrolled eye movements and reduced field of view of the image do not allow to harvest the full potential of magnetic resonance imaging (MRI) in clinical/research ophthalmology, neuroscience, and neurology. Other anatomical imaging technologies (confocal imaging, optical coherence tomography (OCT), Fundus Photography) provide alternatives but have their own limitations. The present invention overcomes all these technical impediments and opens a new era for ophthalmic MRI.

### DESCRIPTION

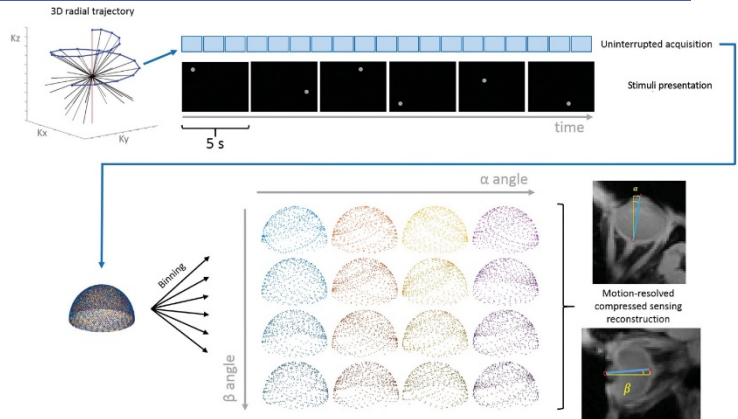
Non-invasive and versatile MRI provides measurements on the tissue/organ structure as well as neural activity. However, image artefacts arising from eye motion prevent the applicability of MRI techniques to eye imaging, impeding the investigation of the interplay between anatomical structures and their motion or simultaneous functional imaging of the eye and brain during eye-movements.

Our invention addresses the need for a comprehensive, non-invasive research and assessment tool that can yield structural, oculomotor and functional information about the eye while it freely moves, exploiting motion rather than considering it as a confounder through motion-resolved MRI techniques.

The 3D MRI of the moving eye has the potential to complement current ophthalmic screening procedures, by offering a new way to simultaneously assess structure & oculomotricity, while bypassing the need for fixation and use of anaesthetics in the ophthalmic clinical practice.

### STAGE OF DEVELOPMENT

Technique validated in a cohort of healthy participants.



Schematic illustration of the framework from image acquisition to reconstruction [1]

### COMPETITIVE ADVANTAGES

- Precise 3D MRI of the freely moving eye
- Comprehensive measures of the eye's and surrounding musculature's structure as well as function, extending across the entire eye-brain circuitry
- Expand the capability of existing MRI equipment (standard clinical setup; no specialized hardware)
- Easy and seamless integration to existing MRI software platform

### INTELLECTUAL PROPERTY

International publication: WO2020/178397A1, priority date of March 05 2019, applicant CHUV and naming Franceschiello Benedetta et al. as inventors.

### PUBLICATION

[1] Franceschiello, et al., (2020)  
*Progress in Neurobiology*, 194: 101885

### COLLABORATION OFFER

PACTT offers to grant exclusive or non-exclusive license to industrial partners able to develop and commercialize the technology.

### REFERENCE

IDF 02/19



Unil  
UNIL | Université de Lausanne

PACTT TTO UNIL-CHUV  
Biopôle 3, CH-1066 Epalinges  
Switzerland

www.pactt.ch

Claude Lefebvre  
+41 (0)79 556 0293  
claude.lefebvre@chuv.ch



Fondation  
Asile des aveugles