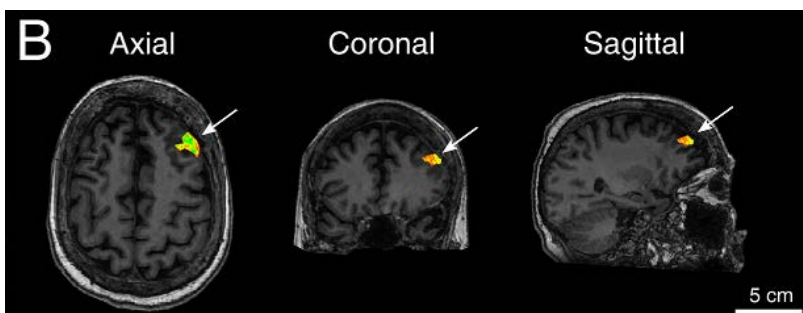


ANTONIS POULIOPOULOS

A CLINICAL SYSTEM FOR NON-INVASIVE BLOOD-BRAIN BARRIER OPENING USING A NEURO-NAVIGATION-GUIDED SINGLE-ELEMENT FOCUSED ULTRASOUND TRANSDUCER

Focused ultrasound (FUS)-mediated blood-brain barrier (BBB) opening is currently being investigated in clinical trials for non-invasive and targeted drug delivery into the brain. There are three approaches for performing FUS treatments in humans, depending on the transducer type and guidance method: a) MR-guided FUS transducers, b) implantable FUS transducers, and c) neuronavigation-guided FUS transducers. In this talk, we will introduce a portable clinical FUS system with a therapeutic transducer suitable for humans. We will focus on the development of a neuronavigation-guided 0.25-MHz single-element FUS transducer for non-invasive BBB opening in the clinic. We will first discuss the numerical simulations and experiments performed to determine the characteristics of the FUS beam within a human skull. We will then show the feasibility of BBB opening obtained with this system in non-human primates using U.S. Food and Drug Administration (FDA)-approved treatment parameters. Finally, we will present preliminary results from two ongoing clinical trials using this system, directed at treatment of Alzheimer's disease (NCT04118764) and diffuse intrinsic pontine glioma in paediatric patients (NCT04804709).



i3M Seminar



Antonis Pouliopoulos

King's College
London

DATE AND PLACE
22.06.2022 at 10:00

Salón de Grados I (ETSII)
Edificio 5F, planta 2
and [online](#) (via Chrome)



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