

# Viability of MiSFIT in Migraine clinical studies using single shell acquisitions (P.02.17)



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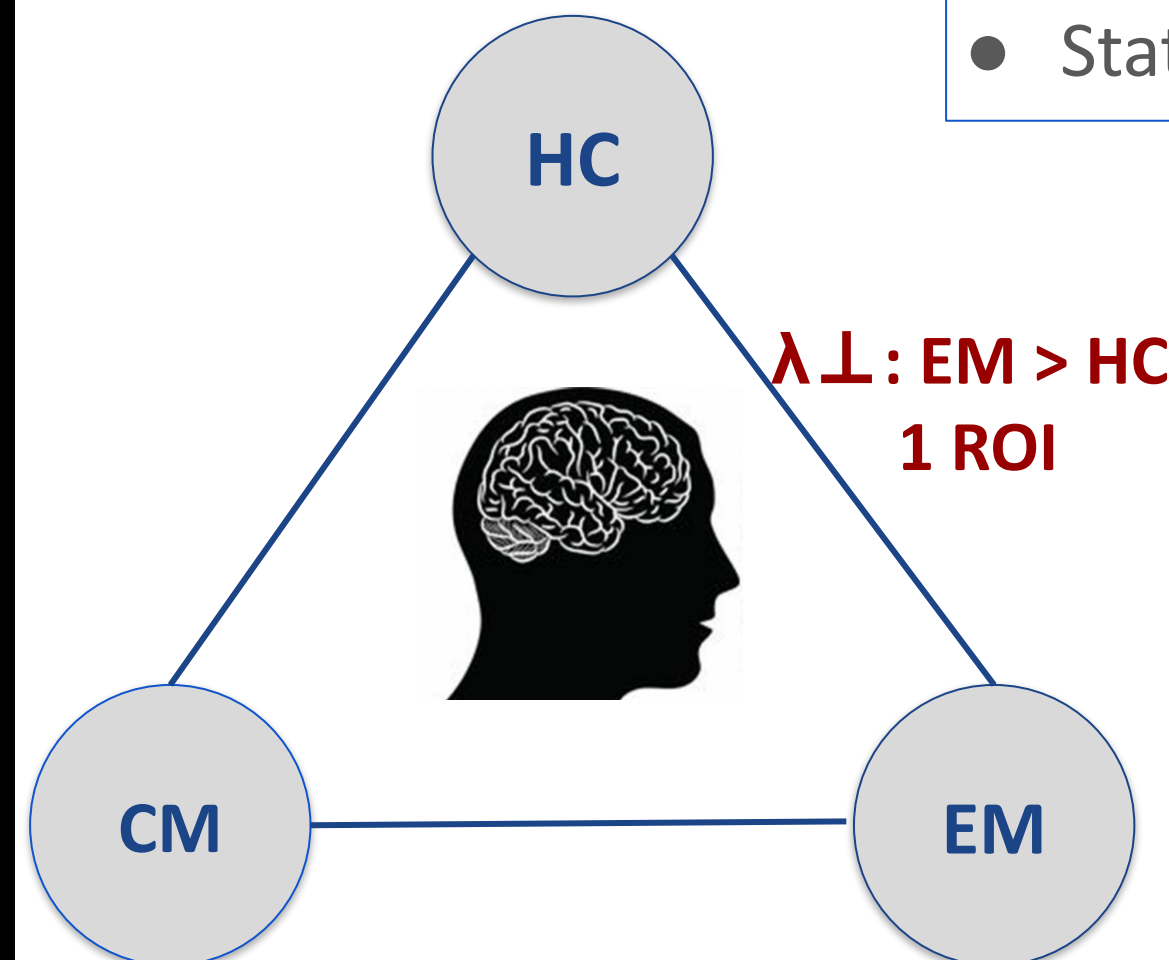
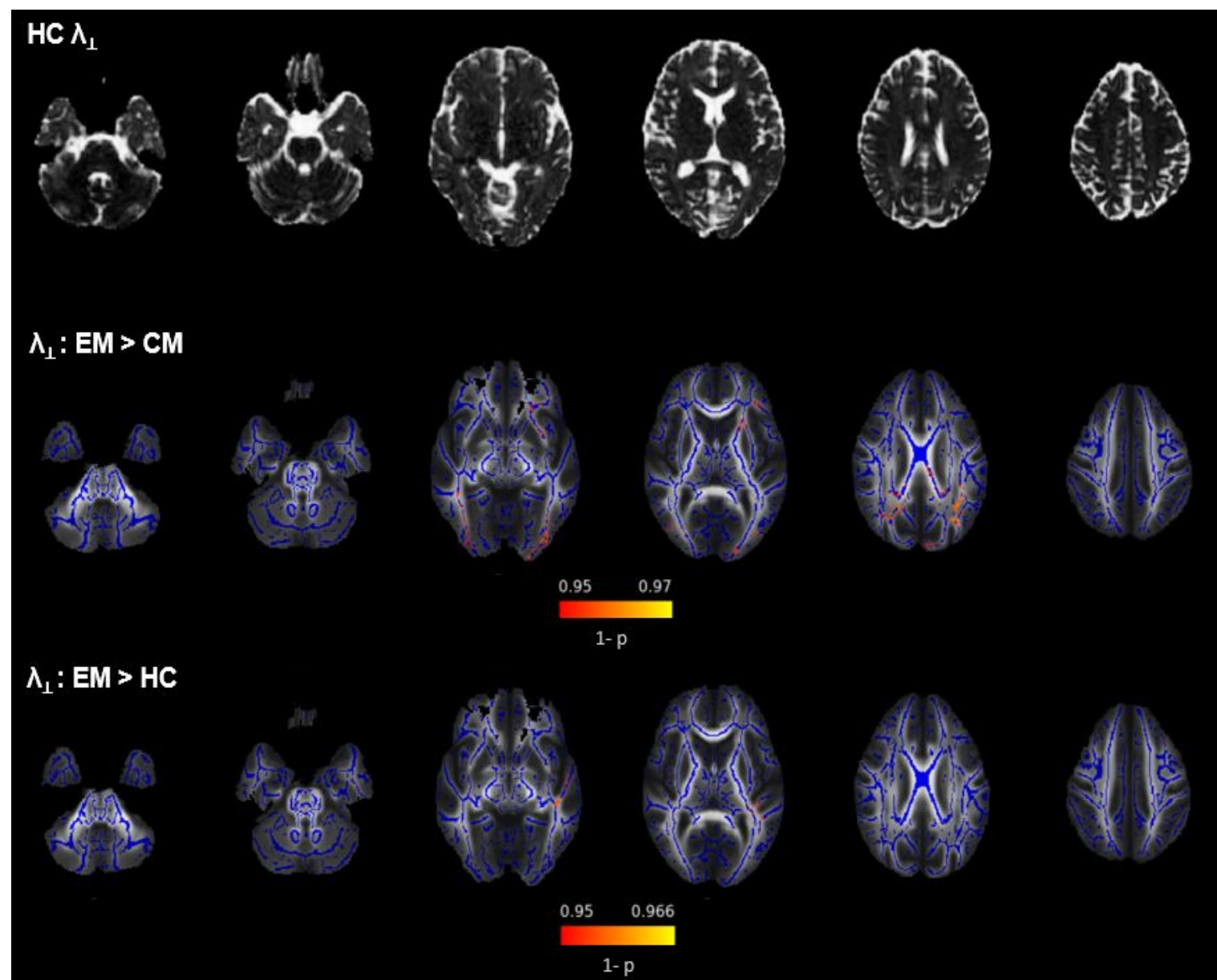
## Introduction

**White matter (WM)** changes have been identified in **migraine** patients using DTI but are insufficient [1].

**Goal:** Evaluate the viability of the transverse diffusivity ( $\lambda_{\perp}$ ) [2,3], calculated using **MiSFIT** [2], from DTI single-shell acquisitions.

$\lambda_{\perp}$ : effective diffusion perpendicular to a small fiber section.

## Results



AD: EM > CM - 40 ROIs  
MD: EM > CM - 38 ROIs  
 $\lambda_{\perp}$ : EM > CM - 7 ROIs

## Methods

➔ **Acquisition:** dMRI, single-shell ( $b=1000 \text{ s/mm}^2$ )



50 Healthy Controls (HC)  
51 Episodic Migraine (EM)  
56 Chronic Migraine (CM)

➔ **Processing**

- $\lambda_{\perp}$  measure using MiSFIT
  - Free water is not considered
  - Constant Parallel diffusivity ( $\lambda_{\parallel}$ ) → single-shell
- TBSS analysis
- Statistically significant results:  $p < 0.05$  and regions  $> 30 \text{ mm}^3$

## Discussion

**MiSFIT** can detect alterations using standard single-shell DTI acquisitions, with constant  $\lambda_{\parallel}$ .

$\lambda_{\perp}$  is able to provide **complementary information** to traditional DTI measures, especially in areas with complex fiber configurations.