

Phantom Results of the ISMRM Joint RRSg-qMRSG

Reproducibility Challenge on T_1 mapping

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Declaration of Financial Interests or Relationships

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I have no financial interests or relationships to disclose with regard to the subject matter of this presentation.

Challenge Pitch

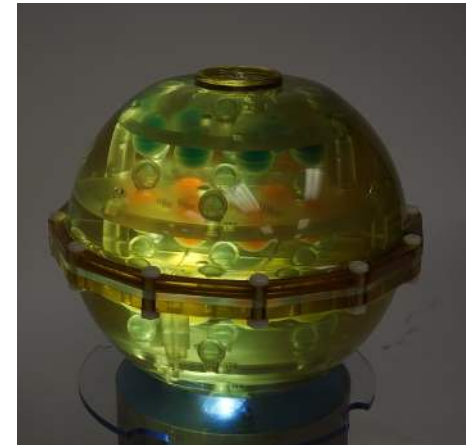
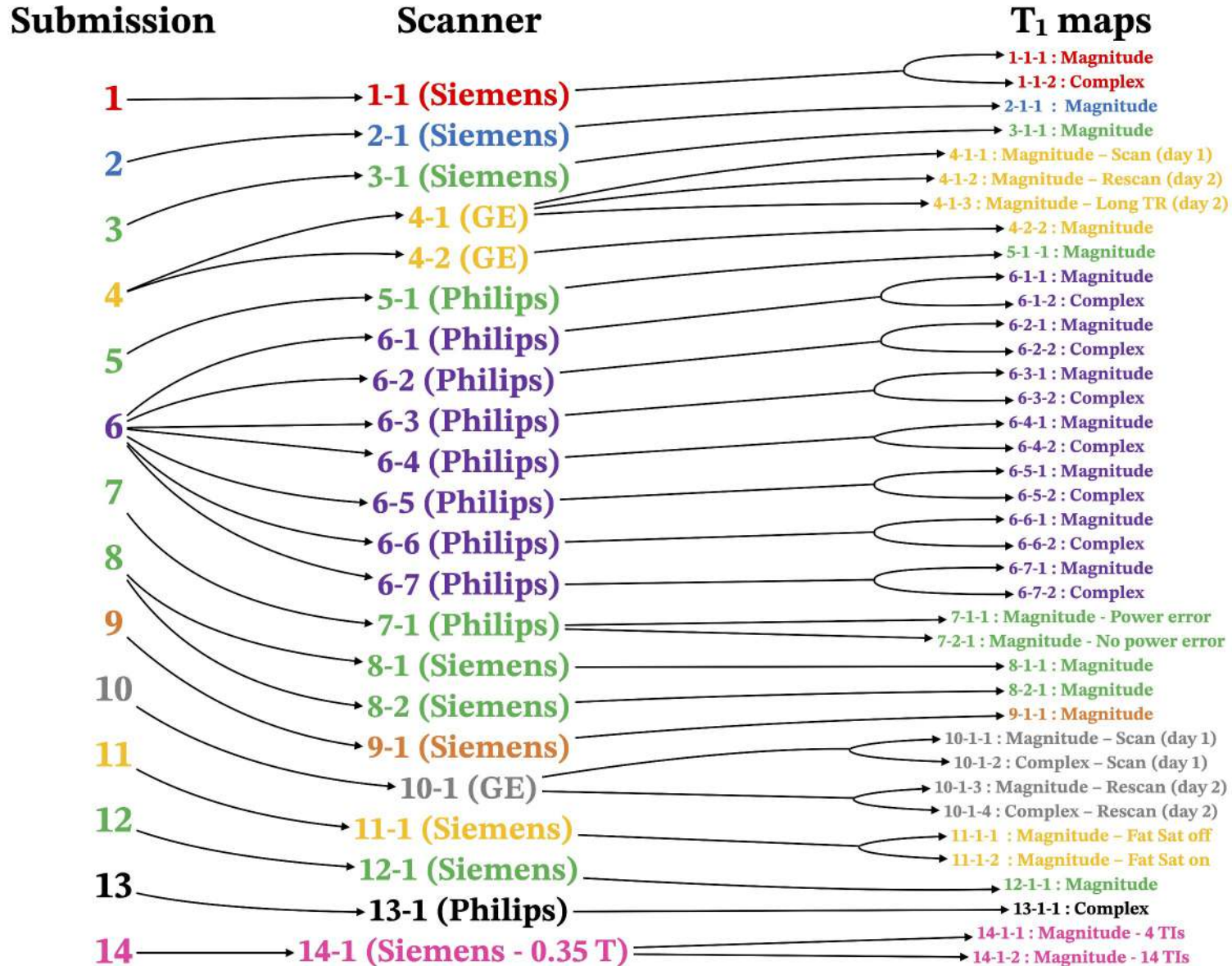
The 2020 ISMRM reproducibility challenge posed the following question: will an imaging protocol **independently-implemented** at multiple centers reliably measure what is considered one of the **fundamental MR parameters** (T_1) using the most robust technique (**inversion recovery**) in a **standardized phantom** (ISMRM/NIST system phantom)?

Imaging Protocol

Pulse Sequence	Spin-echo inversion recovery
Repetition Time (TR)	2550 ms
Inversion Time (TI)	50, 400, 1100, 2500 ms
Echo Time (TE)	14 ms
In-plane resolution	1x1 mm ²
Slice thickness	2 mm

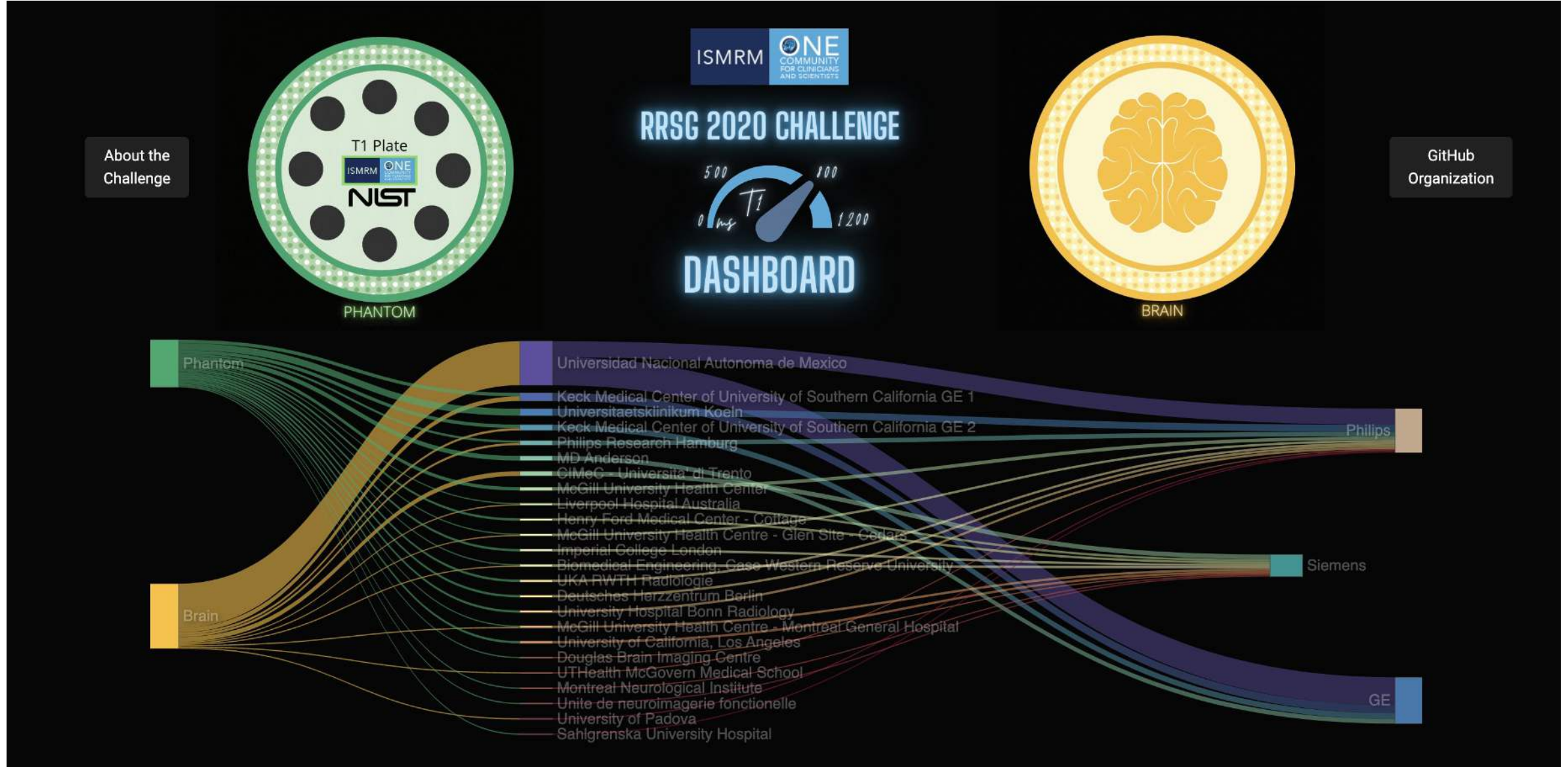
Accepted Submissions

Phantom
Serial #
006
023
042
046
088
102
103
111
? (>0042)

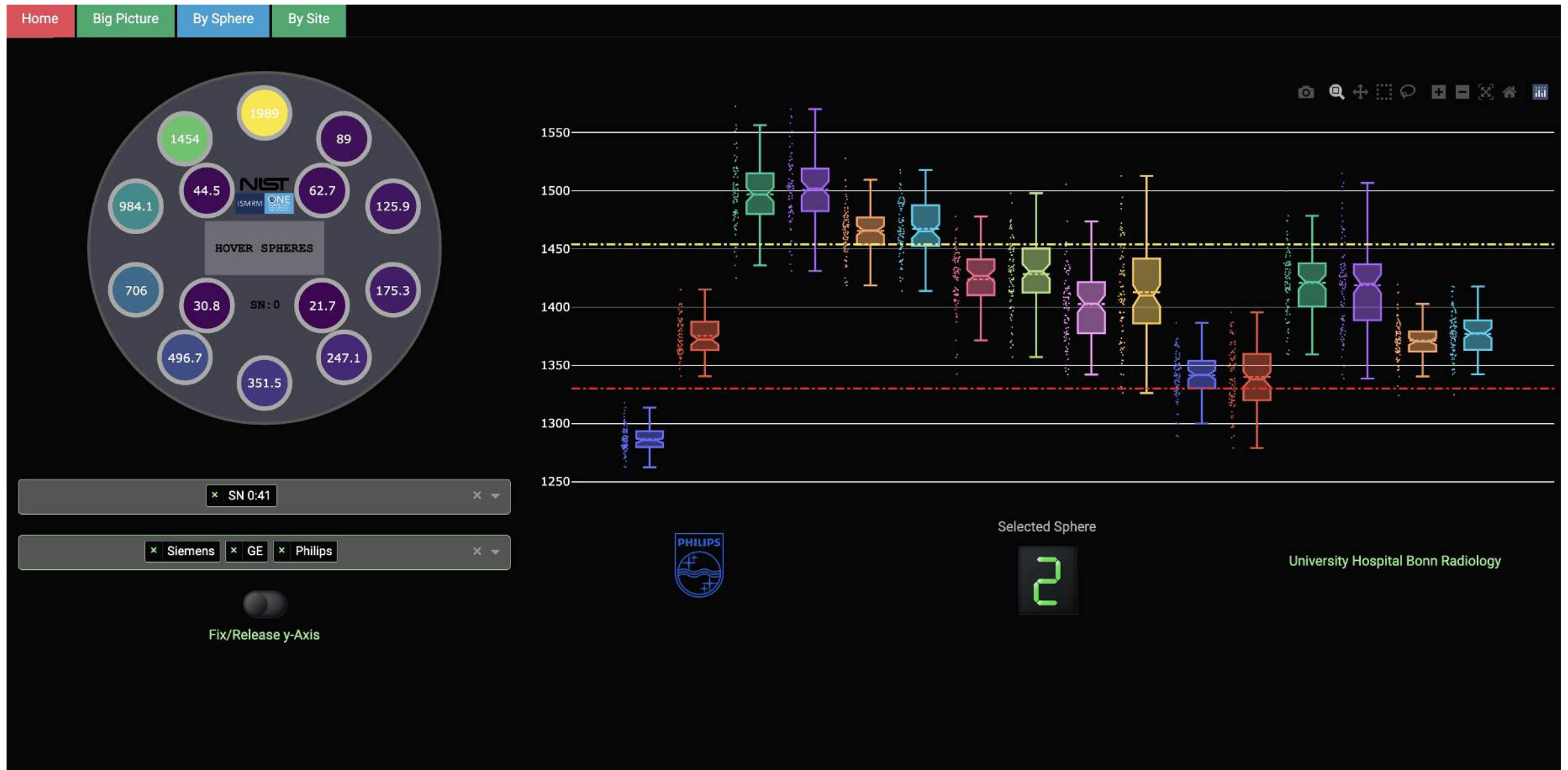


qMRI System Phantom
(CaliberMRI / NIST)

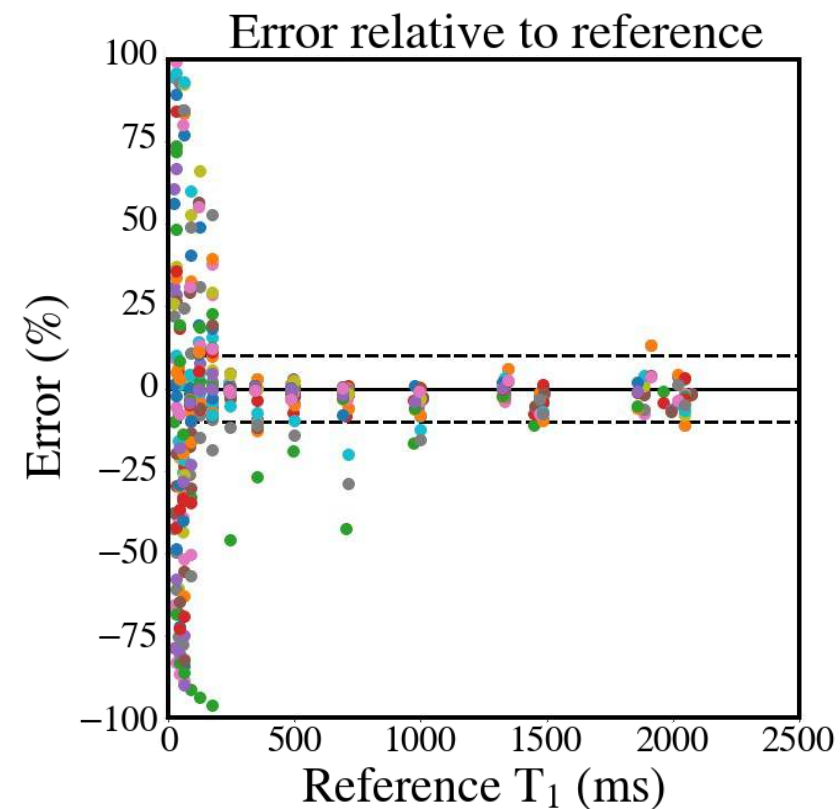
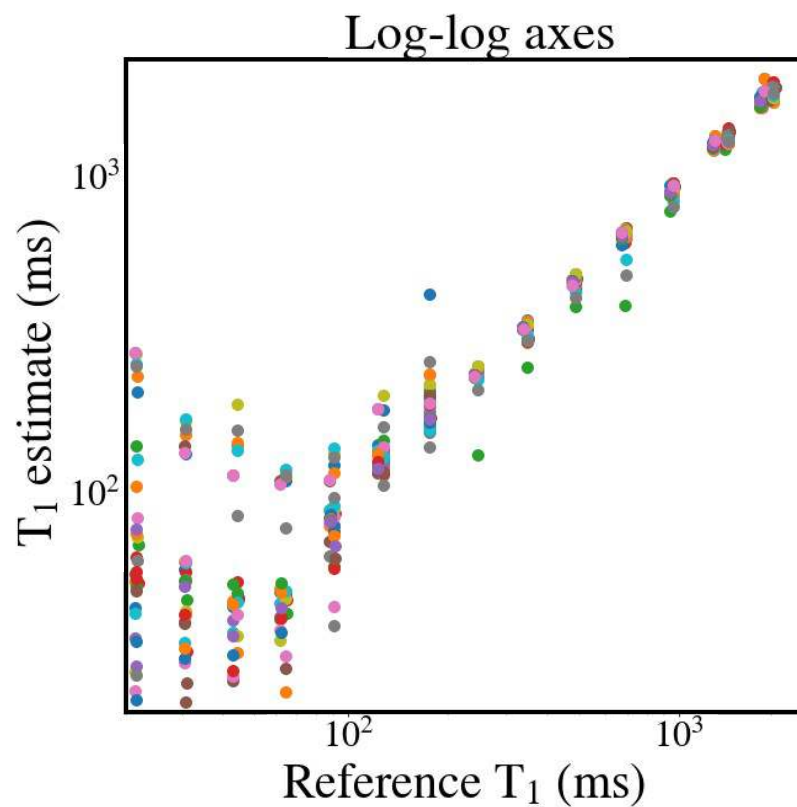
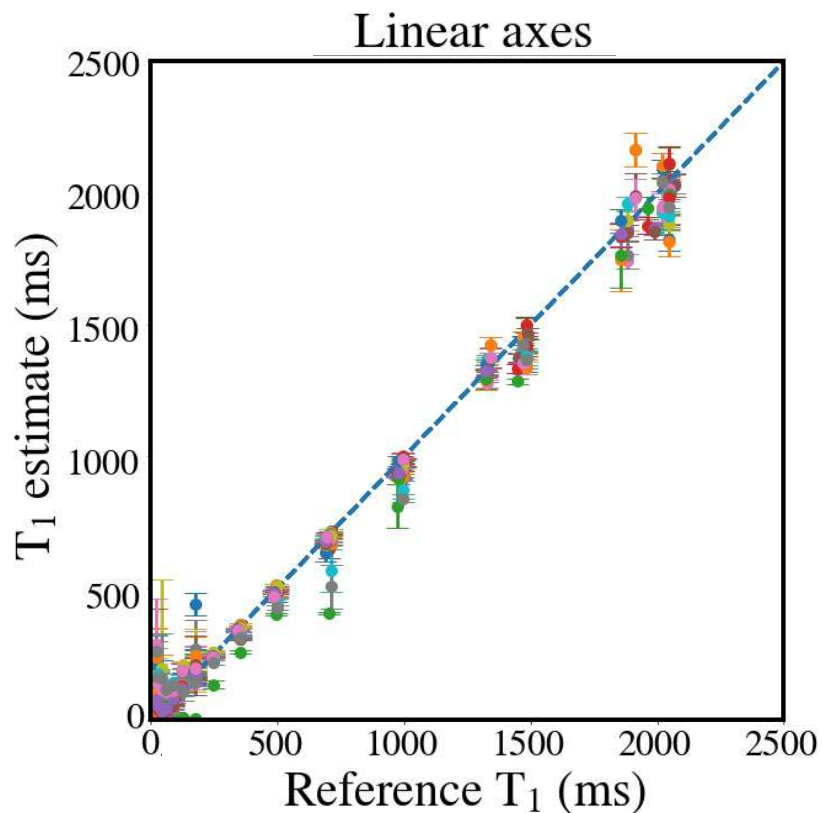
Dashboard



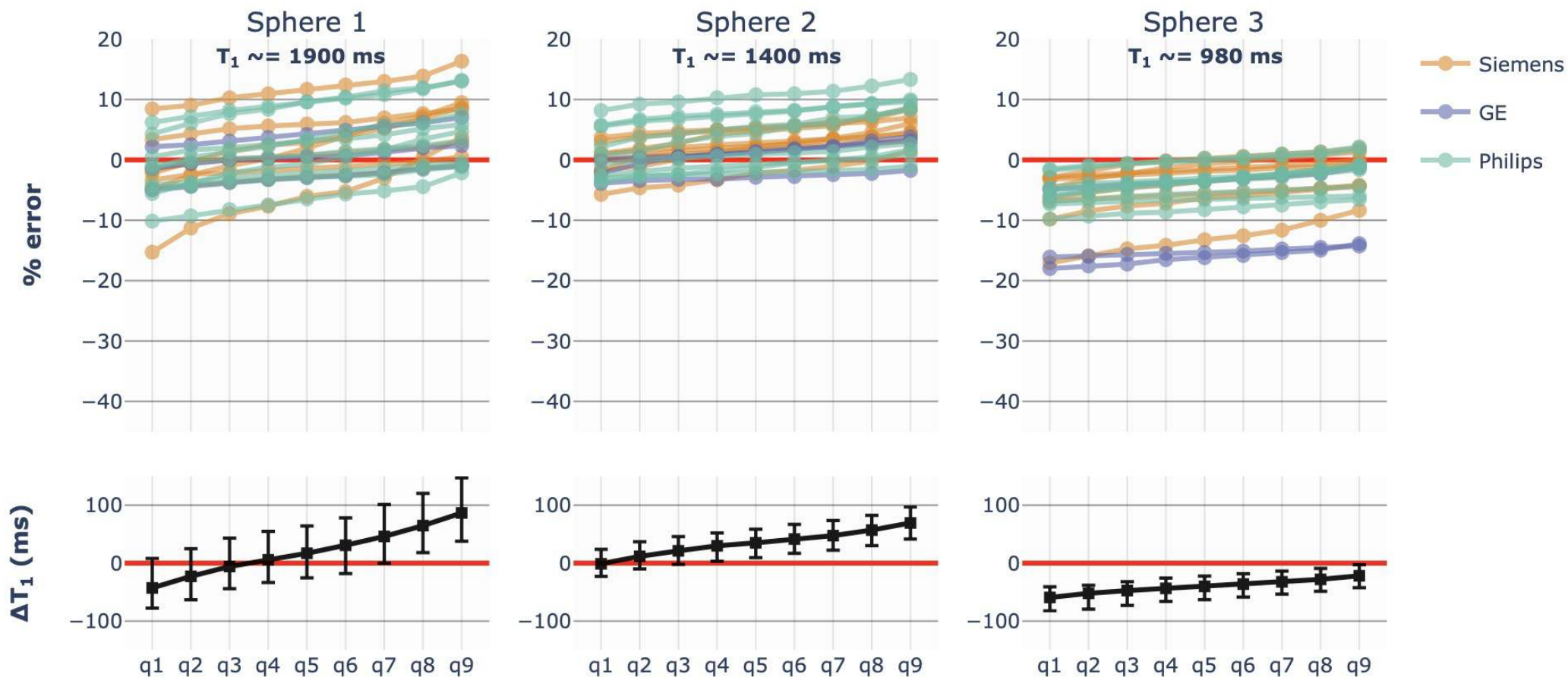
Dashboard



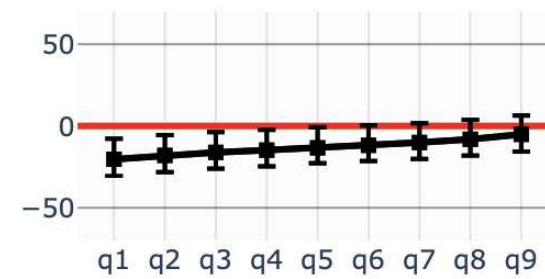
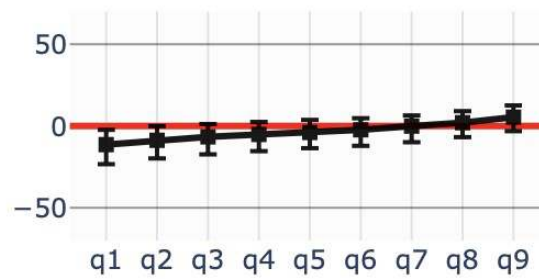
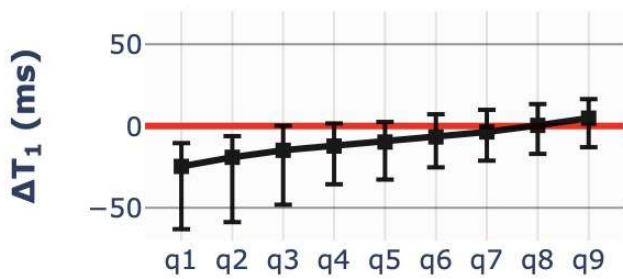
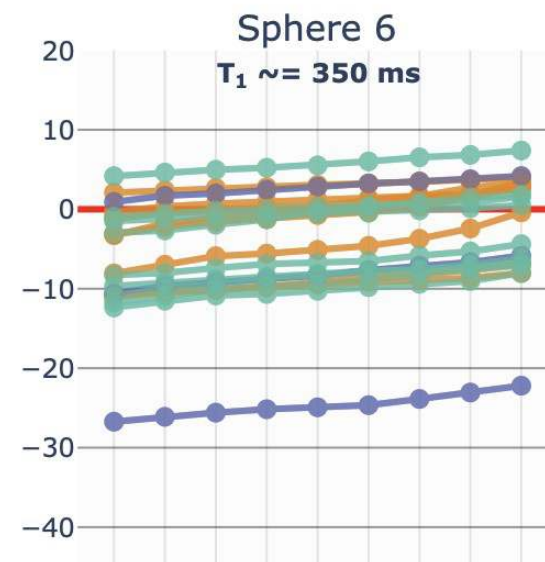
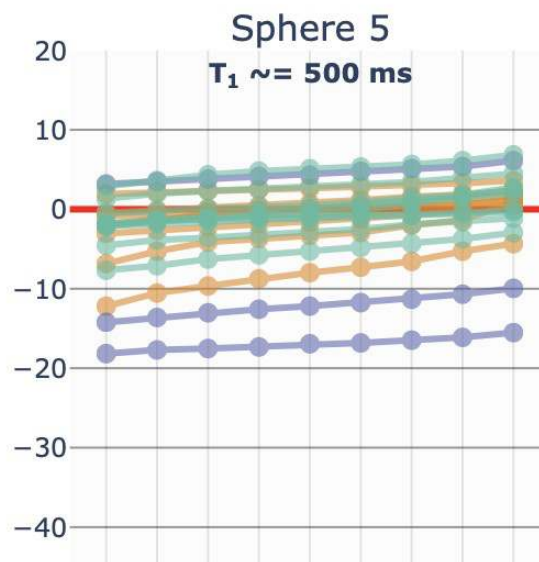
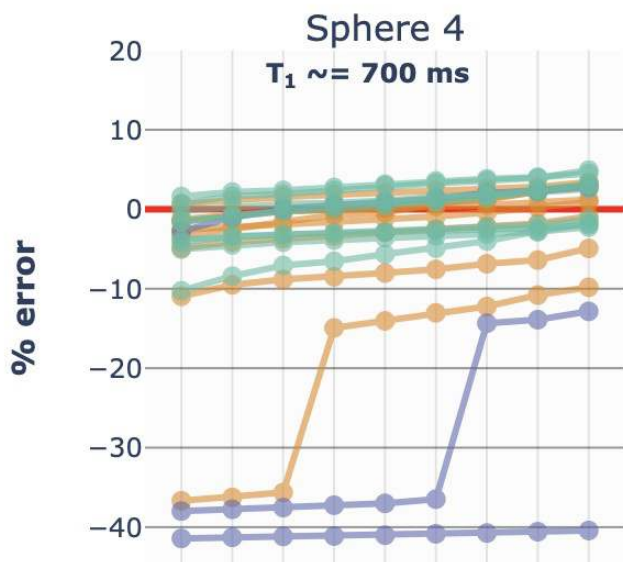
Temperature-corrected T_1 values



Hierarchical Shift Function Analysis



Hierarchical Shift Function Analysis



Take-home message



Most submissions resulted in good T_1 agreement with reference values for the human range of T_1 values.

Inter-participant mean CoV:
6.1 %

Intra-participant mean CoV:
2.9 %



Data and code from this challenge is available online

Collected datasets:

osf.io/ywc9g/

GitHub Repository

github.com/rrsg2020/

Dashboard

rrsg2020.dashboards.neurolibre.org

Events

