

Motion-resolved B1⁺ prediction using deep learning for real-time pTx pulse-design.

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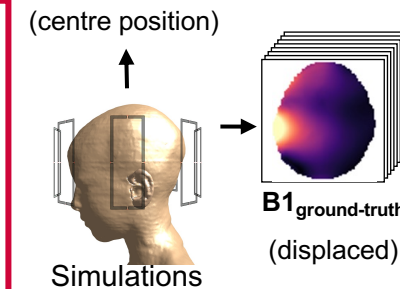
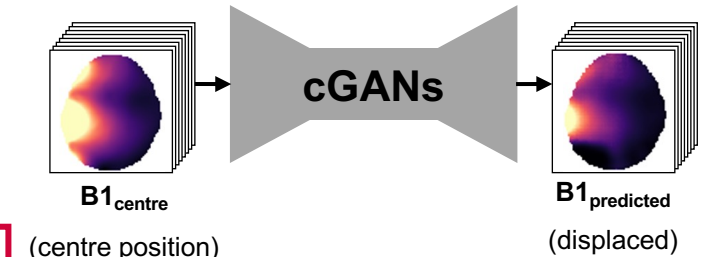
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Background & Methods

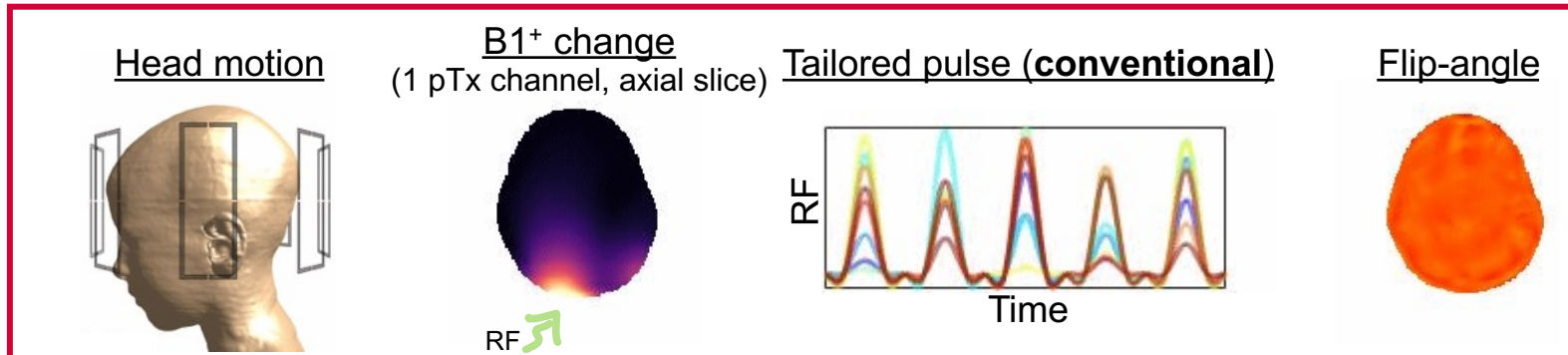
- 7T MRI – parallel transmission (pTx) [1]
- pTx pulses are **motion-sensitive** [2,3,4,5]
- Real-time pTx pulse re-design [6]
 - Requires “real-time” B_1^+ maps...
- Conditional Generative Adversarial Networks [7]

- **Sim4Life** pTx simulations (Zurich MedTech, Zurich)
 - 3 body models (2 training + 1 validation) [8]
 - 30 head positions each (axial displacements)

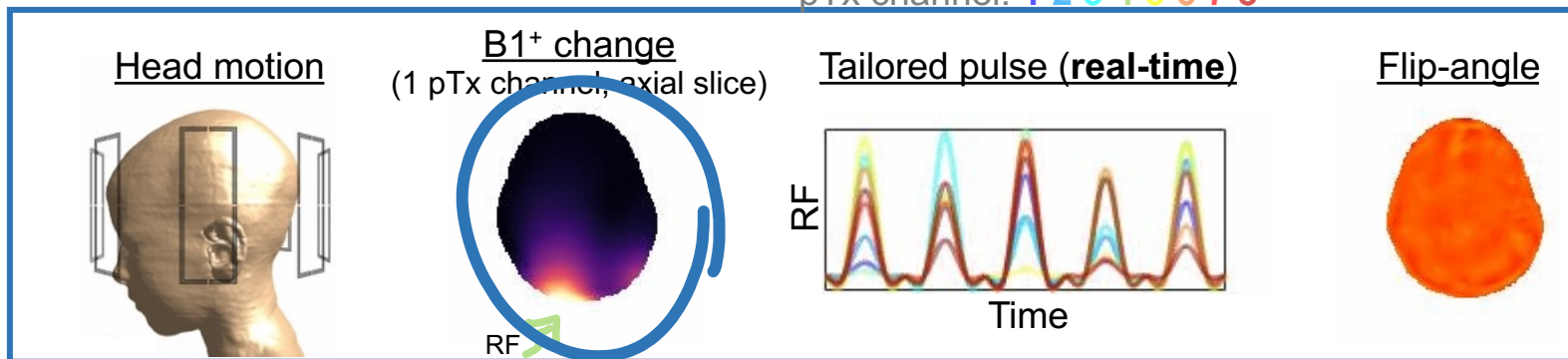


RMSE
Voxel-wise correlation

- [1] U. Katscher and P. Bornert, *NMR Biomed*, 19 (3), 2006. [2] W. Grissom, et al. *Mag Res Med*, 2006. [3] E. Kopanoglu, et al. *Proc. Intl. Soc. Mag. Reson. Med.* 27, 2019. [4] N. Schön, et al. *Proc. Intl. Soc. Mag. Reson. Med.* 28, 2020. [5] E. Kopanoglu, et al. *Mag Res Med*, 2020. [6] E. Kopanoglu. *Proc. Intl. Soc. Mag. Reson. Med.*, 26, 2018. [7] P. Isola et al. *CVPR*, 2018. arXiv:1611.07004v1 [8] M.C. Gosselin et al. *Phys. Med. Biol.* (59), 2014.

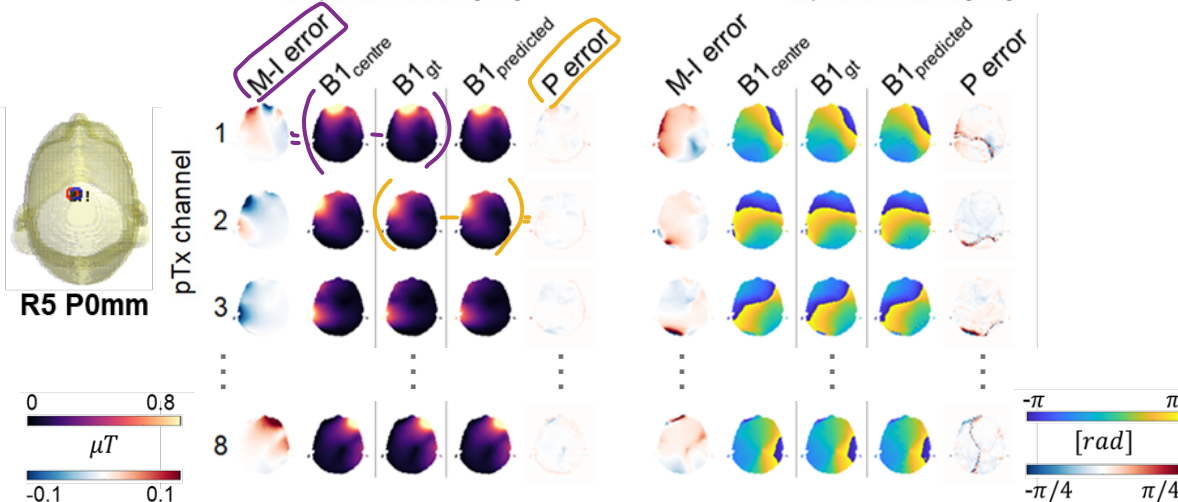
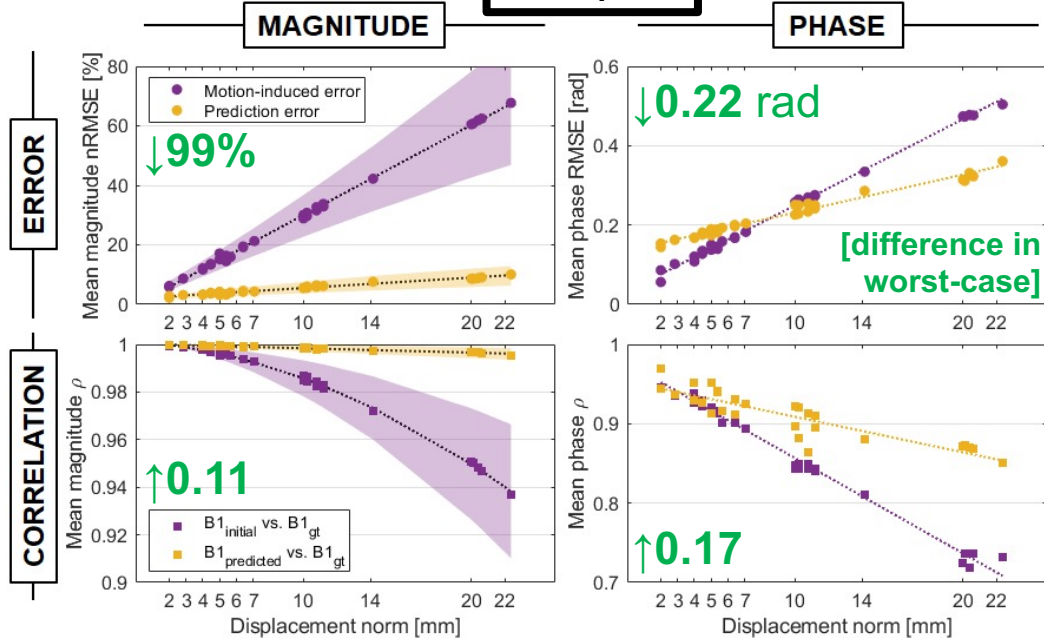


pTx channel: 1 2 3 4 5 6 7 8



Results & Conclusions

B_1^+



Flip-angle

