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Quantitative radial magnetic resonance fingerprinting in the animal brain

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Magnetic resonance fingerprinting (MRF) uses non-steady state magnetic resonance acquisitions and dictionary-based matching to measure parameters such as T1, T2, B0 and B1. Standard clinical contrasts can then be calculated from these retrospectively. Here, we implement a radial acquisition scheme for MRF and apply it to the animal brain at 9.4T to map T1 and B1 in short in vivo acquisitions in rats and marmosets. We show an application of the method by calculating synthetic images at a range of repetition times and a series of inversion recovery images. The short scan times here make MRF feasible for routine animal studies, adding a huge range of potential quantitative opportunities for structural brain phenotyping in a range of models.

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