Supporting Figures

Free-breathing Volumetric Fat/Water Separation by Combining Radial Sampling, Compressed Sensing, and Parallel Imaging

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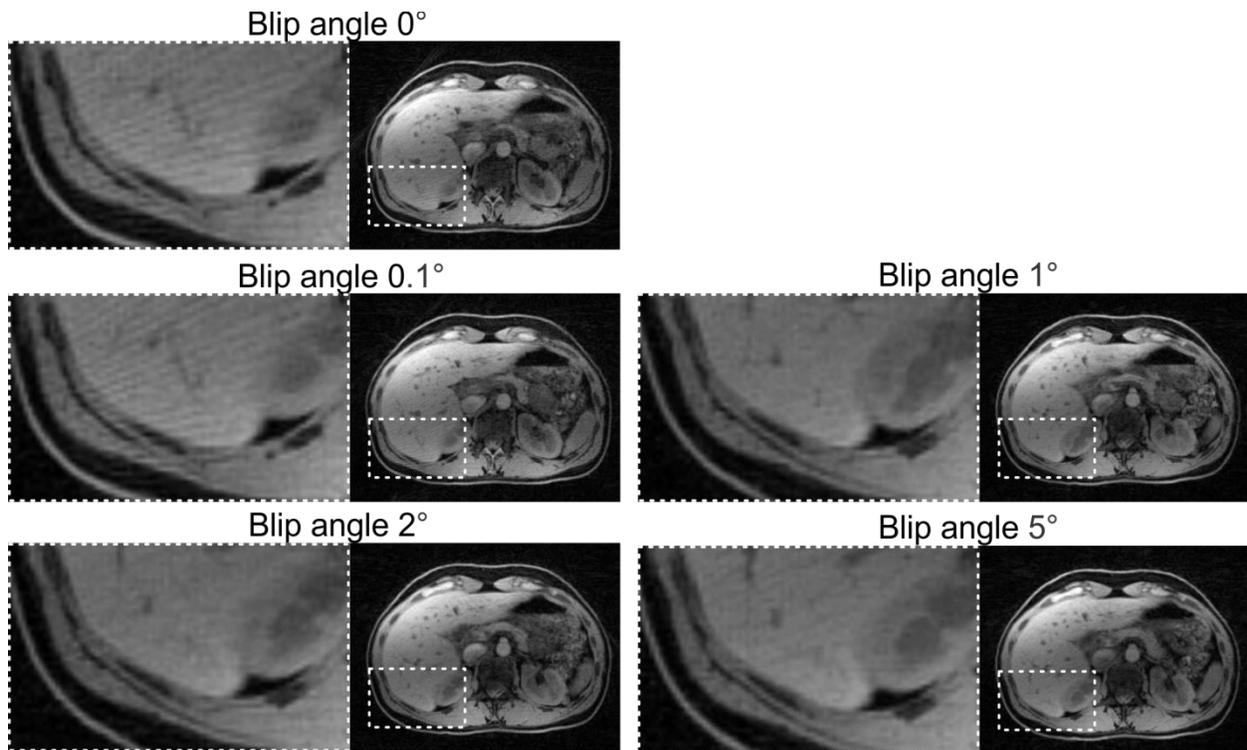
Supp. Fig 1: Dixon-RAVE reconstructions performed on datasets with different rotation angles for subsequent radial projections within one repetition time. As can be seen, streaking artifacts are reduced for blip angles 1/2/5° compared to very small or no rotation (blip angle = 0.1/0°). However, when the blip angle is chosen too large, repetition time and therefore scan time is prolonged, and eddy currents might be generated due to the required rapid gradient switching. To exclude this potential source of artifacts, an angle of 2° was chosen for all acquisitions in this work.
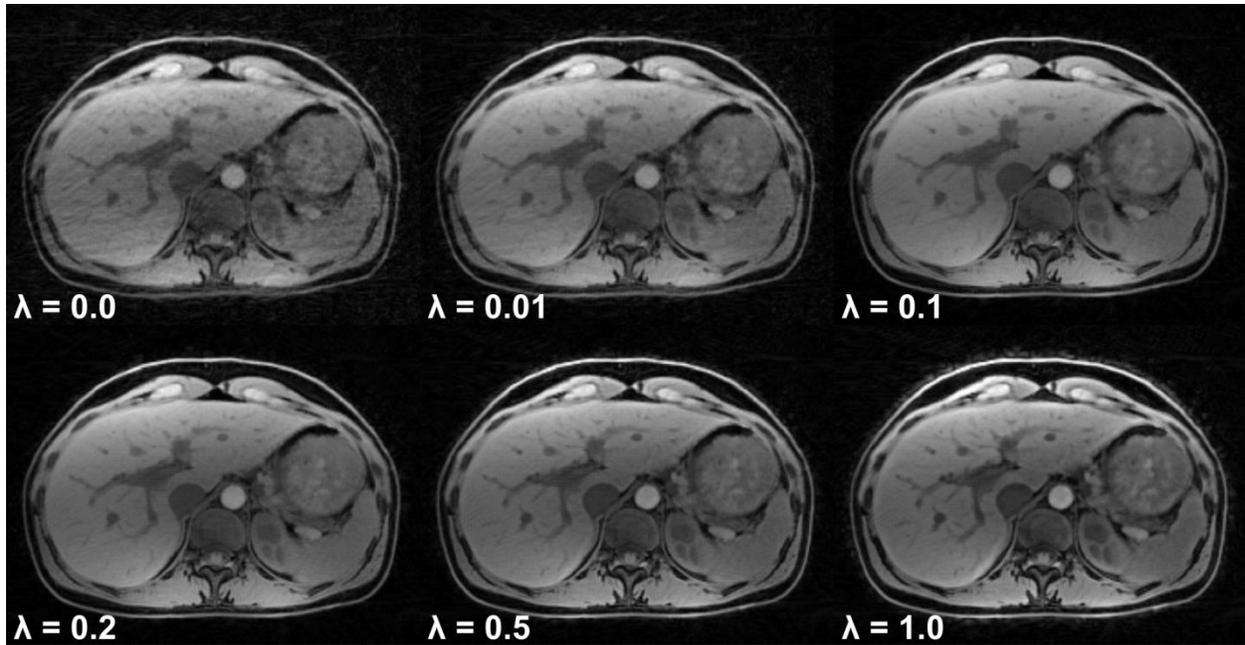
Supp. Fig 2: XD-Dixon-RAVE reconstruction with varying regularization parameter $\lambda_W = \lambda_F = \lambda$. While residual streaking artifacts can be seen for λ-values which are too small ($\lambda = 0.0/0.1$), choosing the regularization parameter in the range of $0.1 < \lambda < 0.5$ leads to consistent results with only minimal streaking artifacts and high vessel sharpness. When λ is chosen too high ($\lambda = 1.0$), slight blurring of small structures is introduced. For all XD-Dixon-RAVE results shown in the other figures, $\lambda = 0.2$ was chosen.
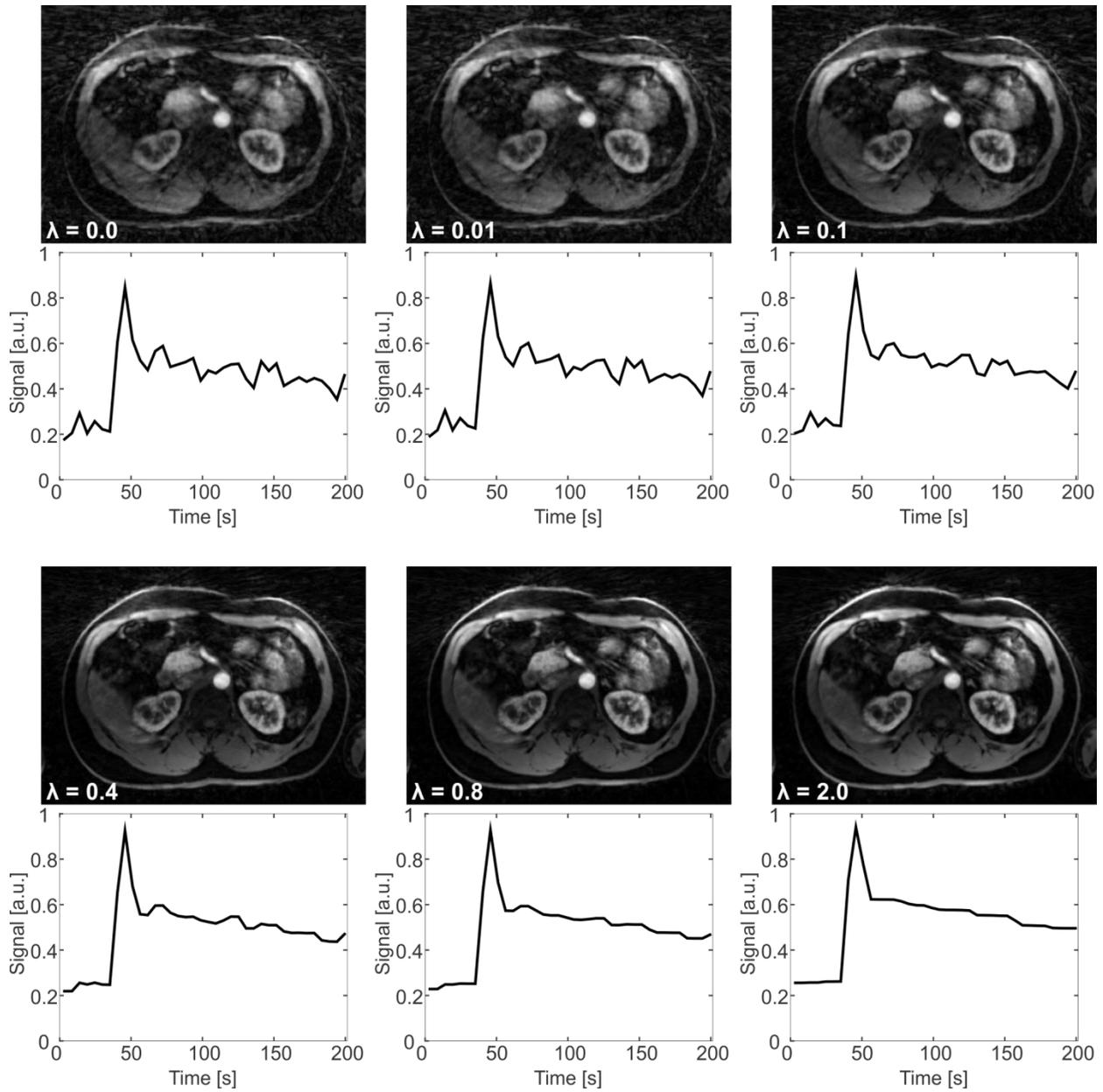
Supp. Fig 3: DCE-Dixon-RAVE reconstruction with varying regularization parameter λ_W = λ_F = λ. Small λ-values (λ = 0.0/0.01/0.1) lead to streaking artifacts due to undersampling. For higher λ-values (λ = 2.0), the contrast curve is smoothened and temporal fidelity is compromised. Images for both λ = 0.4 and λ = 0.8 show a reasonable tradeoff between removal of streaking artifacts and temporal fidelity. For all DCE-Dixon-RAVE results shown in the other figures, λ = 0.8 was chosen.