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MRM Invited

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Robust Unenhanced MRA in the Presence of Cardiac Arrhythmia

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In the proposed ROMANCE MRA, data were continuously acquired over all cardiac phases using retrospective, multi-phase flow-sensitive single-slab 3D fast spin echo (FSE) with variable refocusing flip angles, while an external pulse oximeter was in sync with pulse repetitions in FSE to record real-time information on cardiac cycles. Data were then sorted into k-bin space using the real-time cardiac information. Angiograms were reconstructed directly from k-bin space by solving a constrained optimization problem with both subtraction-induced sparsity and low rank priors. Peripheral MRA was performed in normal volunteers with/without caffeine consumption and a volunteer with cardiac arrhythmia using conventional fresh blood imaging (FBI) and the proposed ROMANCE MRA for comparison.

Keywords: Angiography, High Resolution, Non-Contrast-Enhanced