

Latest MRI R & D Trends - with high resolution diffusion MRI and CEST

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Trends in human MRI research and development have been evolved toward faster imaging, higher SNR and spatial resolution, novel contrast mechanism and motion robustness. Although there are always tradeoffs between targeted performance and scan time, smarter use of MRI hardware, software and sophisticated physical and mathematical theories applied to MR imaging and reconstruction allowed us to acquire MR images with novel contrast and/or better image quality within faster scan duration.

In this talk, we will discuss the latest MRI research and developmental trends mostly at 3T and some at 7T MRI. Topics will be focused on new & improved image contrast (SWI, pCASL etc), faster and improved data acquisition and reconstruction (SENSE, compressed sensing etc), higher SNR and spatial resolution using 7T MRI and motion-robust data acquisition and processing approaches. Finally, two topics, CEST (chemical exchange saturation transfer) and high resolution motion-robust diffusion MRI (IRIS - Image Reconstruction using Image-space Sampling), will be discussed in detail. Basics and past approaches on these topics will also be discussed.