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Diffusion

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Principles of Diffusion MRI and Latest Technological Trends Diffusion MRI

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This lecture is to introduce recent updates on diffusion magnetic resonance imaging (MRI), including fundamental principles of diffusion data acquisition (DWI, DTI, DKI, HARDI, Q-ball), diffusion encoding, diffusion weighted k- space encoding (single-shot, multi-shot multi silce, 3D single-, multi-slab), and diffusion quantification. Once fundamental concepts on diffusion MRI are briefly introduced, we will move on to scientific and clinical applications for investigating microstructures with intermediate to high b-values as well as slowly moving fluids with low b-values. In general, we will look into different aspects of diffusion MRI in human tissues and fluids over various pathological examples. Lastly, we will discuss pros and cons of state-of-the-art diffusion MRI techniques and their feasibilities in current scientific and clinical applications

Keywords: *Diffusion MRI, Microstructure, Neurofluid*