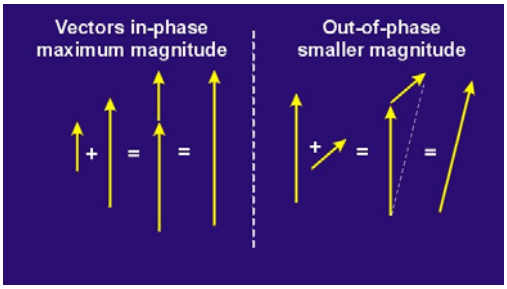
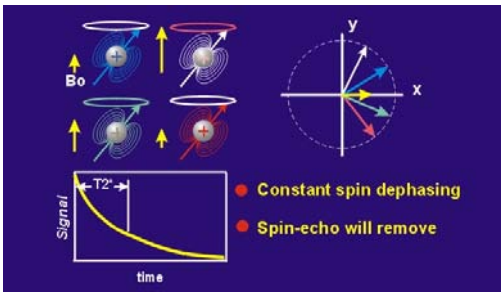
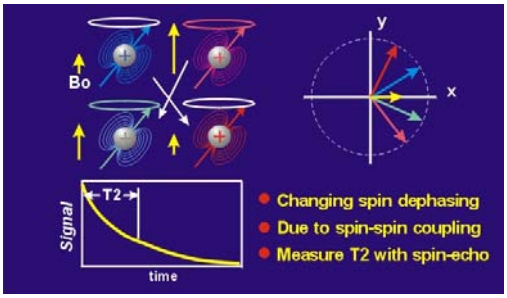
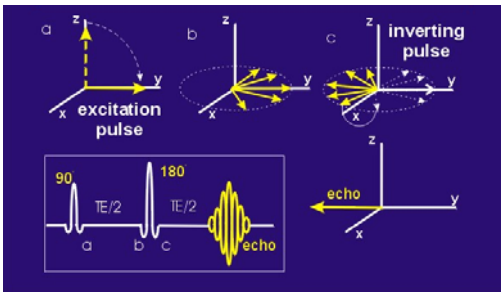
Seznam snímků a relevantní popis série popisu principu MR zobrazování včetně vztahu k jednotlivým videosekvencím

Obrázky a videa byly převzaty z anglického originálu Plewes, D.B.: The Animated Physics of MRI.



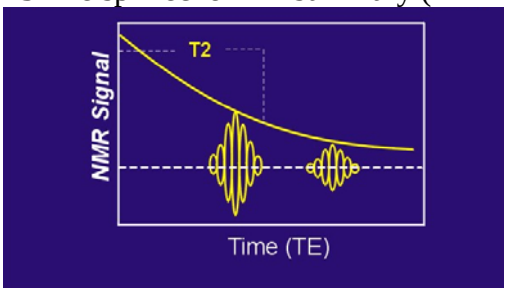




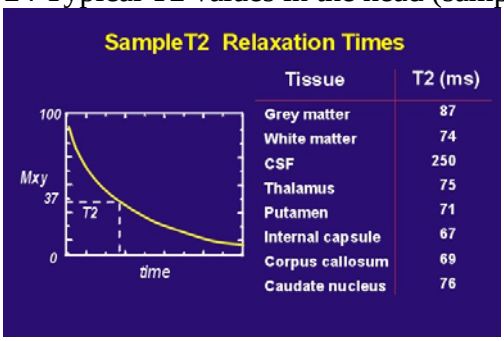


The spin echo 21
video 22 part 1 - The behavior of spin dephasing and RF pulses during the sequence
22 part 2 - NMR signal for different echo times TE
22 part 3 - Detailed view of the transverse magnetization components alone

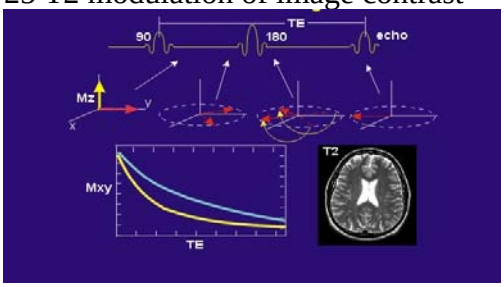
23 The spin echo - T2 summary (MNR signal vs. the time TE)



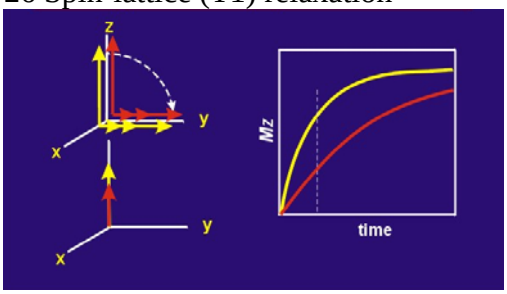
24 Typical T2 values in the head (sample T2 relaxation times)



25 T2 modulation of image contrast

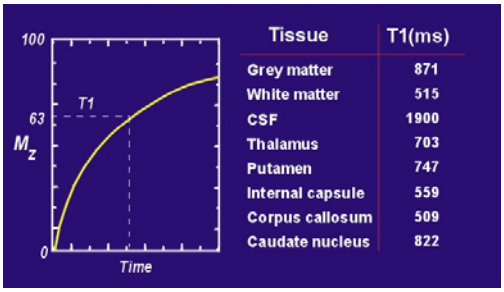


26 Spin-lattice (T1) relaxation

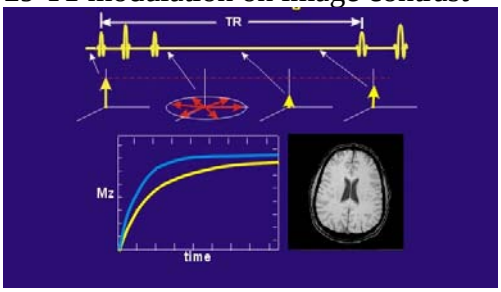


27 Spin-lattice (T1) relaxation - animation
video 13

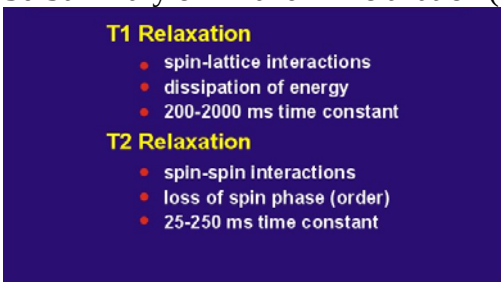
28 Spin-lattice relaxation values for various tissues (sample T1 relaxation times)



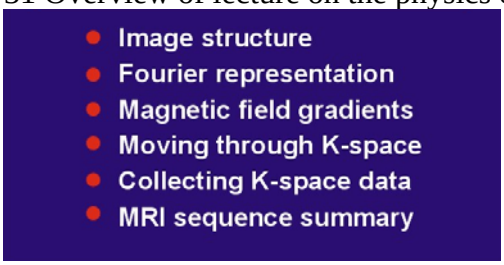
29 T1 modulation on image contrast



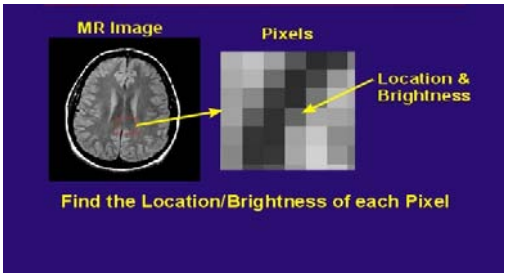
30 Summary of T1 and T2 relaxation (relaxation effects)



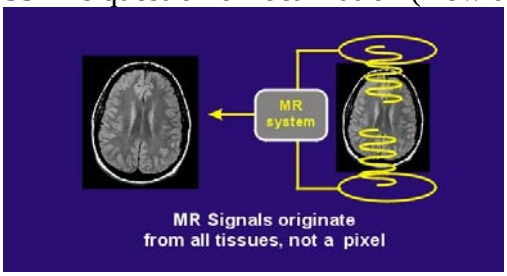
31 Overview of lecture on the physics of image formation (MR imaging)



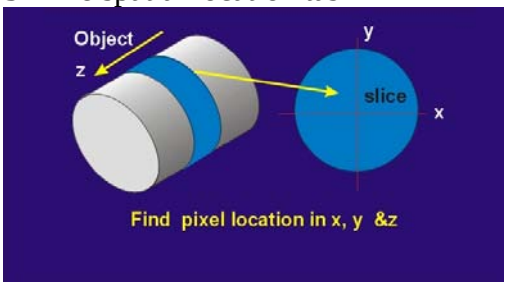
32 Structure of MR images



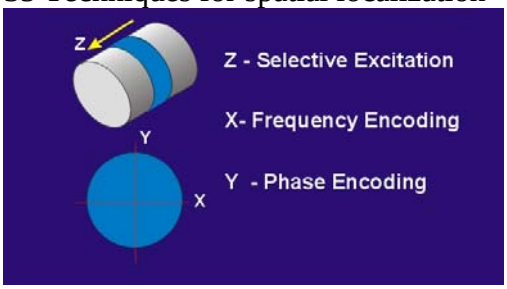
33 The question of localization (How do we localize the signal?)



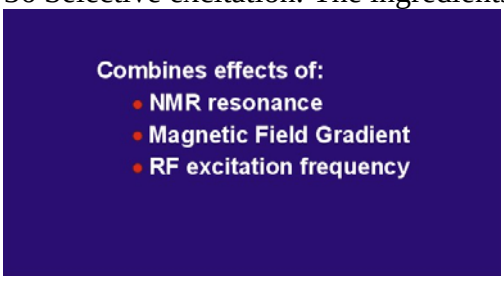
34 The spatial location task



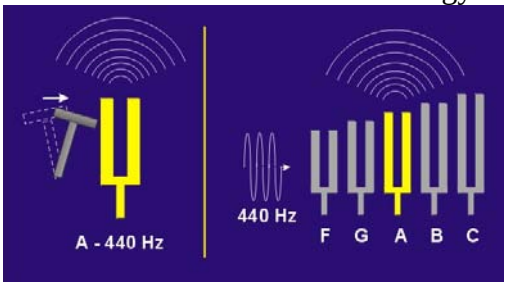
35 Techniques for spatial localization



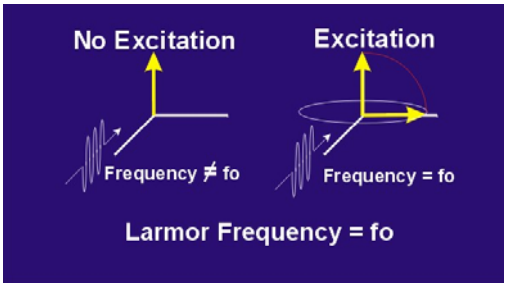
36 Selective excitation: The ingredients



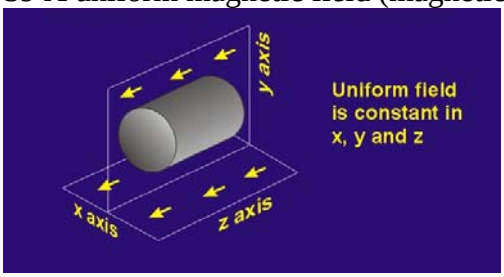
37 Selective excitations: An analogy - resonance



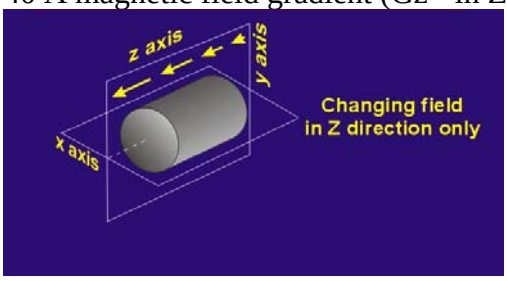
38 Selective excitations and NMR resonance



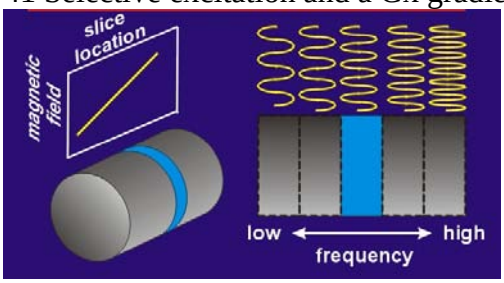
39 A uniform magnetic field (magnetic field gradients)



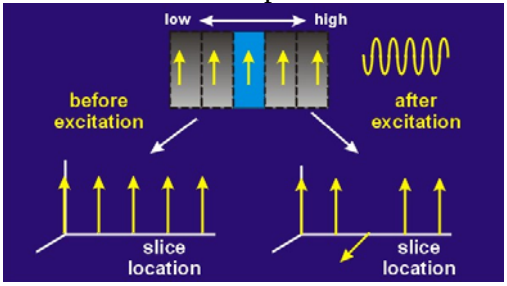
40 A magnetic field gradient (Gz - in Z direction)



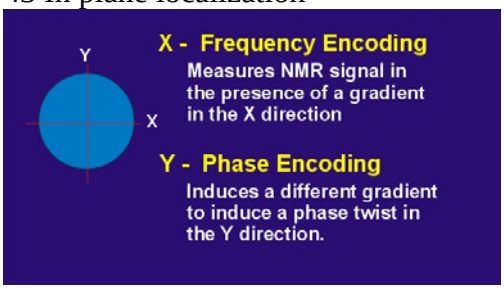
41 Selective excitation and a Gx gradient



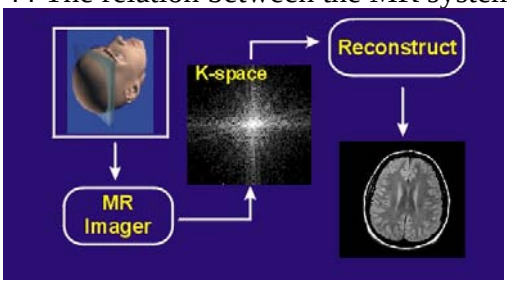
42 The effect of RF pulses in selective excitation



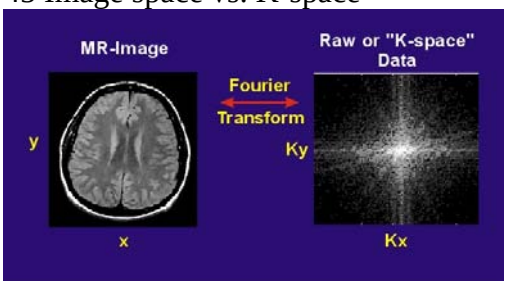
43 In plane localization



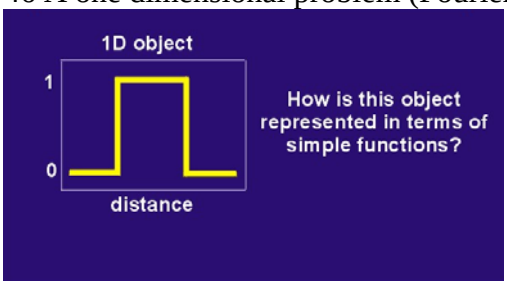
44 The relation between the MR system and image formation



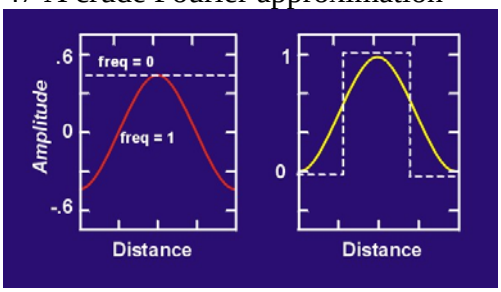
45 Image space vs. K-space



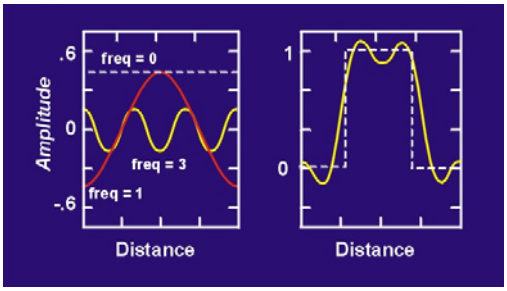
46 A one dimensional problem (Fourier transform)



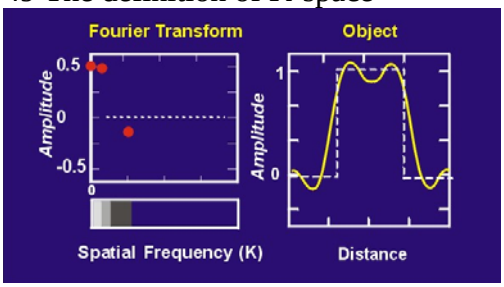
47 A crude Fourier approximation



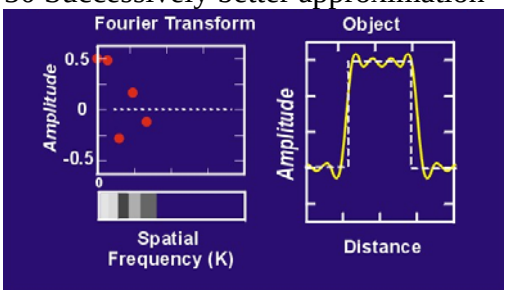
48 A better Fourier approximation



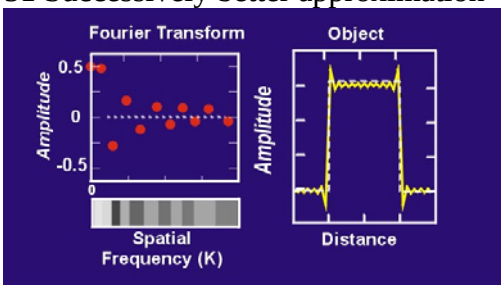
49 The definition of K-space



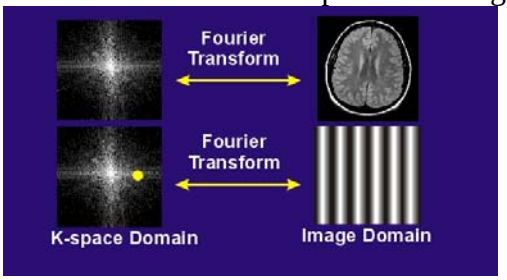
50 Successively better approximation



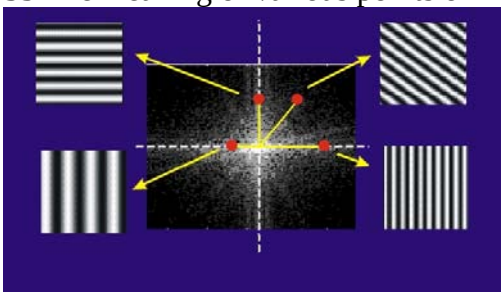
51 Successively better approximation



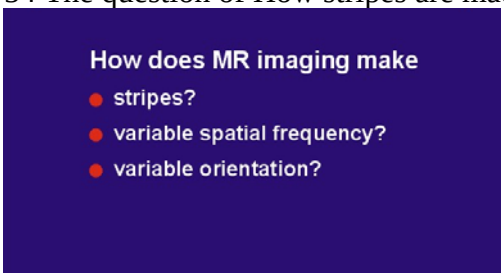
52 Two dimensional K-space and image space (space and image domains)



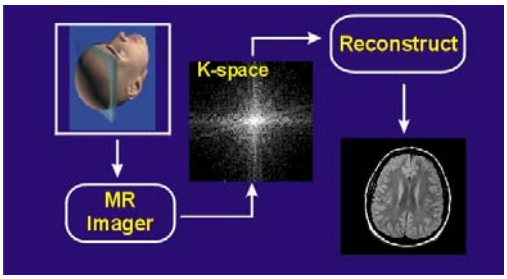
53 The meaning of various points on K-space (Fourier transform representation)



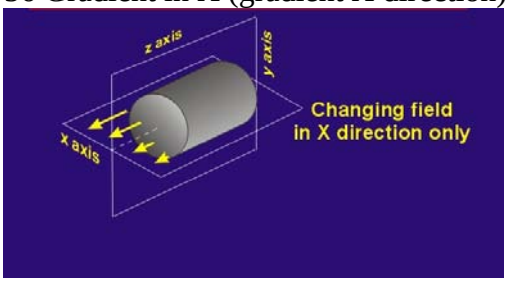
54 The question of How stripes are made in MRI ? (MR image formation)



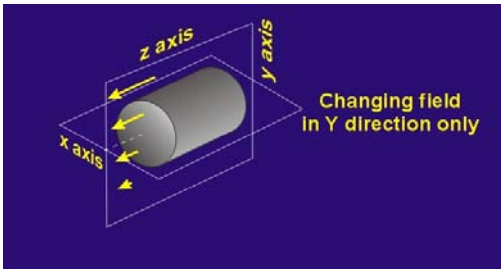
55 Return to the relation of the MR system and image formation



56 Gradient in X (gradient X direction)

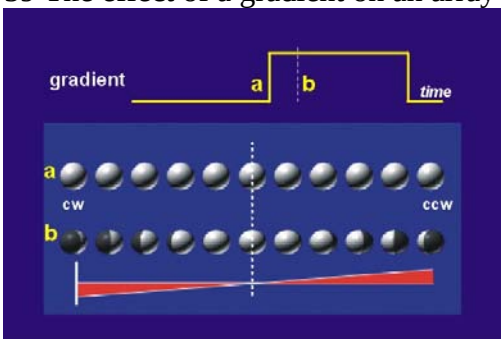


57 Gradient in Y (gradient Y direction)



58 An alternative representation for magnetization
video 14

59 The effect of a gradient on an array of magnetization balls



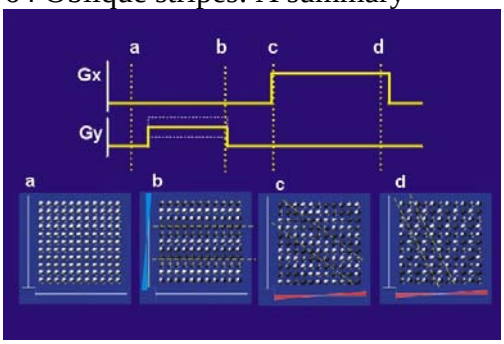
60 The effect of a gradient on an array of magnetization balls (animation)
video 15

61 Creating vertical stripes
video 16

62 Creating horizontal stripes
video 17

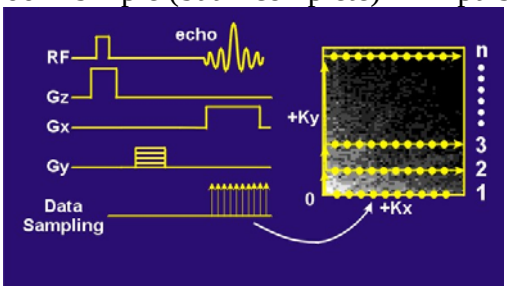
63 Creating blique stripes and K-space
video18

64 Oblique stripes: A summary

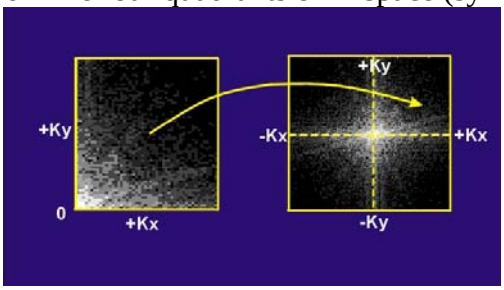


65 How does the MRI system measure the K-space signals?
video 19

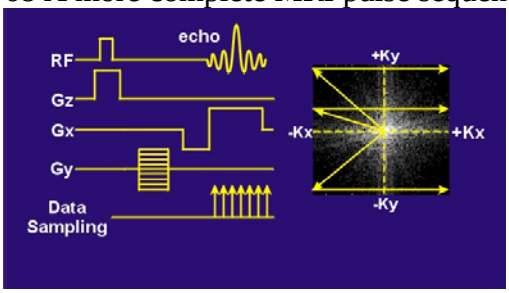
66 A simple (but incomplete) MRI pulse sequence



67 The four quadrants of K-space (symmetric 2D K-space)



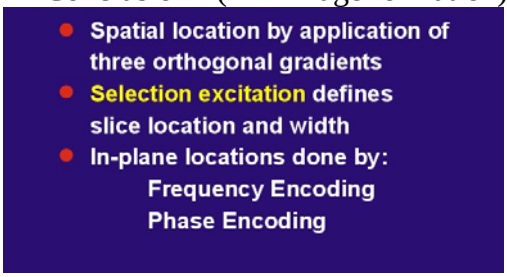
68 A more complete MRI pulse sequence



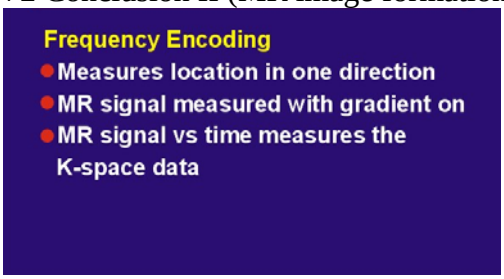
69 Fourier reconstruction of K-space: part A
video 20

70 Fourier reconstruction of K-space: part B
video 21

71 Conclusion I (MR image formation)



72 Conclusion II (MR image formation)



73 Conclusion III (MR image formation)