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# MRI pulse sequences for neuroimaging research

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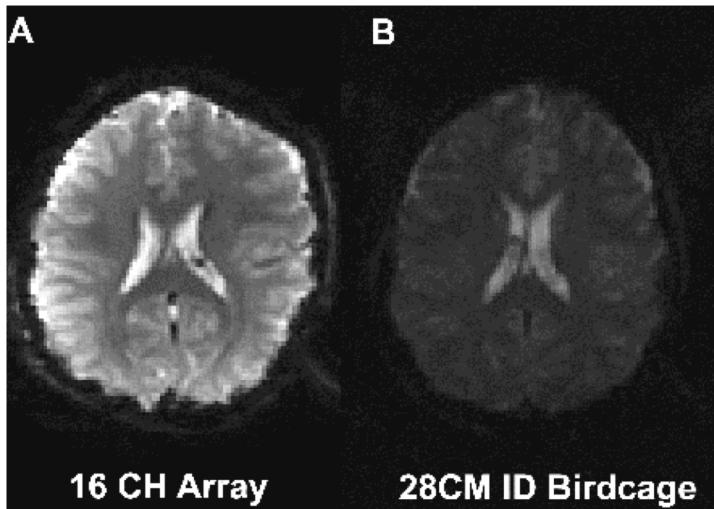
parallel imaging &  
simultaneous multi-slice imaging



# RF technology



*de Zwart et al., NIH*

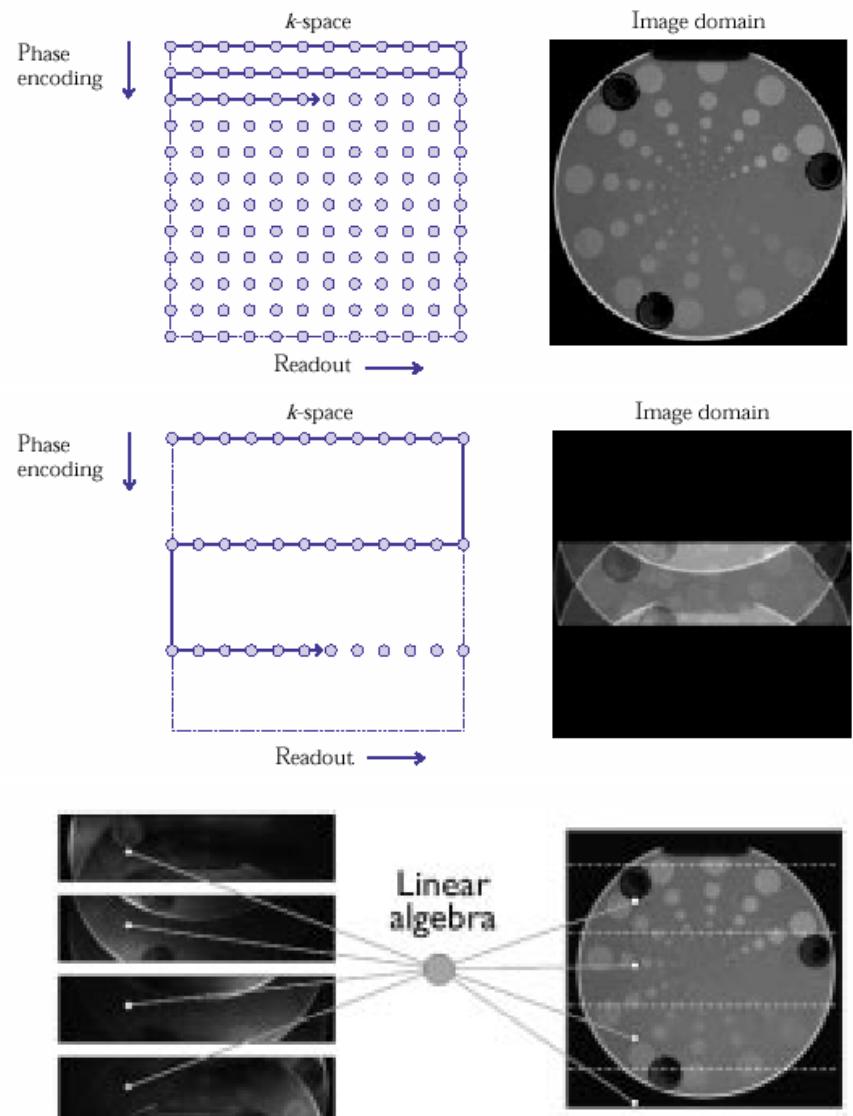
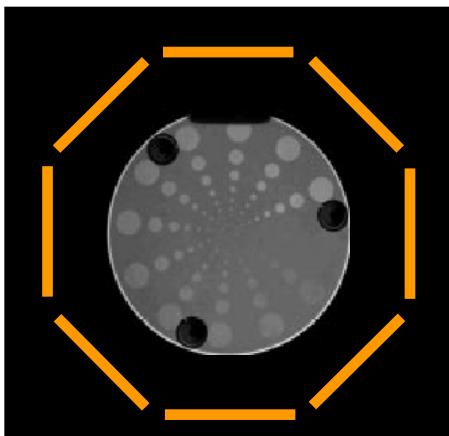
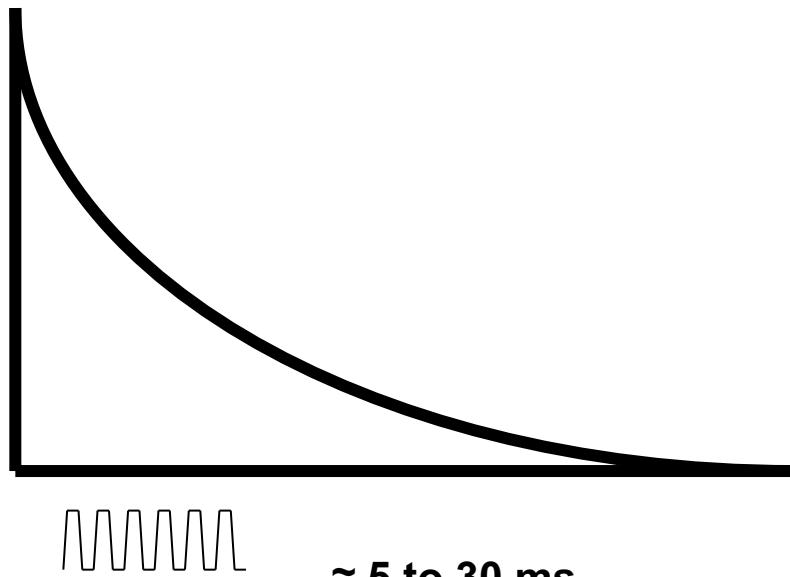


33

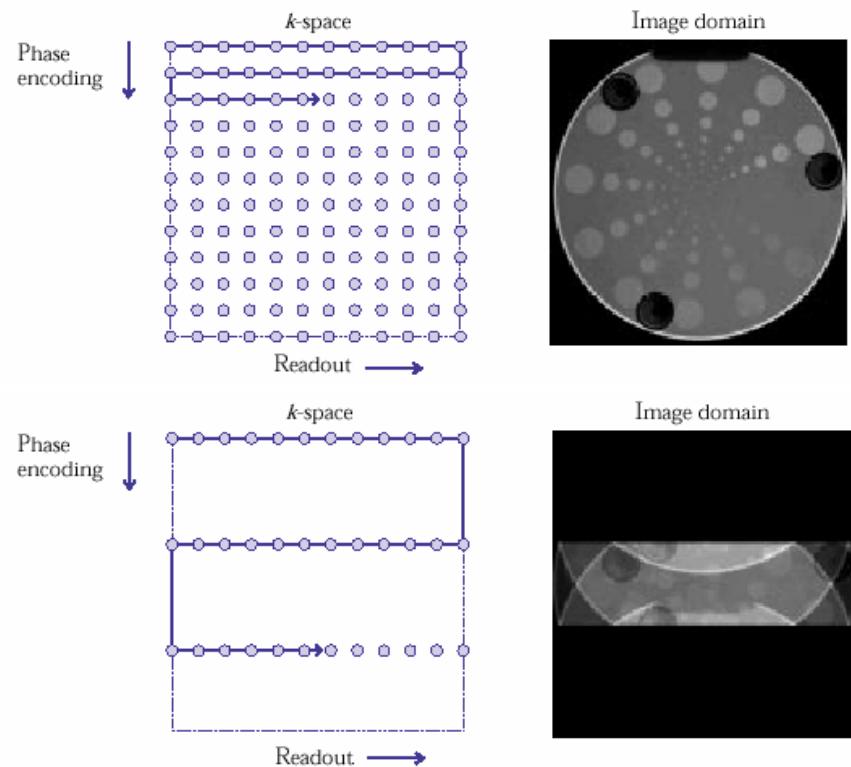
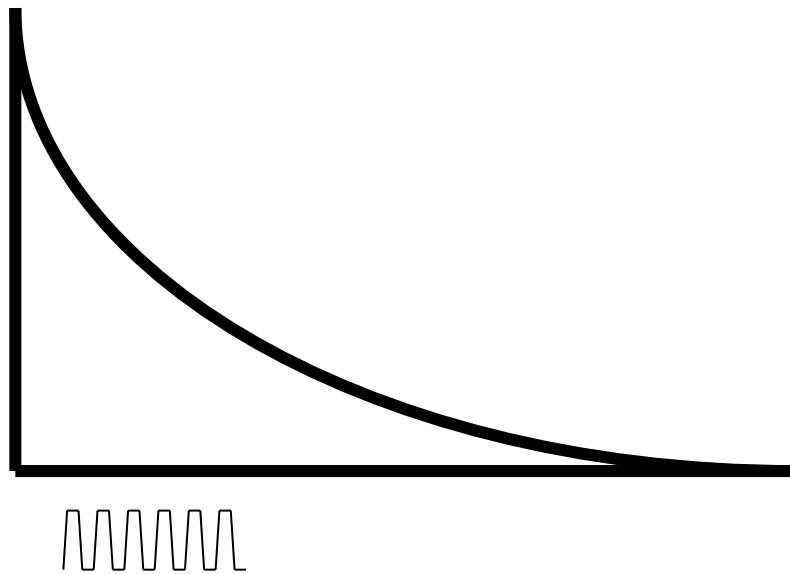
*J. Bodurka, FMRIF, NIH*



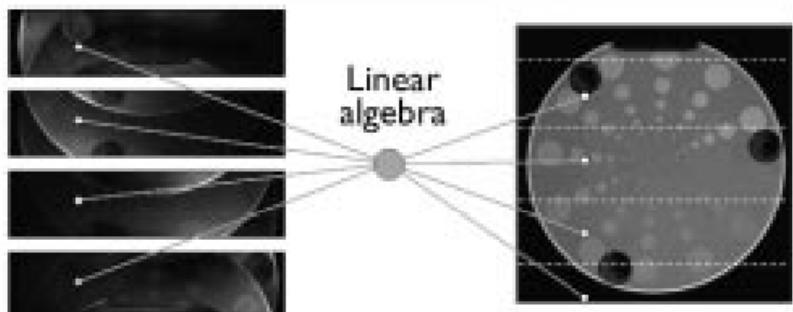
# Parallel imaging



# Parallel imaging



- **Imaging time:**  $\downarrow R$
- **Distortions:**  $\downarrow R$
- **SNR:**  $\downarrow \sqrt{R}$





# Simultaneous Multi-Slice (SMS) imaging

(a.k.a. Multiband)

