

Course-07









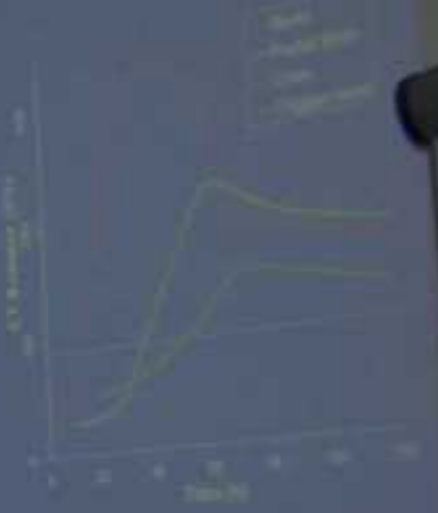






## Clinical Applications - Timing

- ACS placed over blood vessel of interest
- Real time imaging follows CT number of ACS until it reaches preset threshold
- Conventional CT imaging continues at optimal level of contrast media opacity








### Photon starvation

- Parts of individual projections can be very fuzzy due to insufficient photons passing through widest part of patient
- When these views are reconstructed, the noise is magnified, resulting in streaks.



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## Hardware advances

- Tube scanner
- Siemens Definition launched RSNA '05
- 180° fan beam at 90°
- Faster scanning for cardiac imaging
  - 2 x 14 scans a minute
  - Dual energy scanning possible
- Faster tube speeds, more coverage



Courtesy Siemens

- ### Other hardware advances
- Dual energy scanning
  - 180° fan beam at 90°
  - Faster scanning for cardiac imaging
    - 2 x 14 scans a minute
    - Dual energy scanning possible
  - Faster tube speeds, more coverage



# advances

launched RSNA '05

for cardiac imaging

in 30 ms

scanning possible

needed: increase coverage

ng

no tubes (Siemens)

ates at different kV

ation (Philips, GE)

ly, sensitive to

n can be improved



Cyber-Security

### Other hardware advances

- Dual tube system
  - Siemens: Aquilion One (2007)
  - Fuji: Revolution (2007)
  - Philips: Brilliance (2007)
  - GE: Revolution (2007)
- Dual energy scanning
  - Siemens: Aquilion One (2007)
  - Philips: Brilliance (2007)
  - GE: Revolution (2007)





Effect of scan parameters on CTDI

For same image noise, dose can increase with increasing kV

kV	CTDI per unit noise	
	Head	Body
120	1.0	1.0
130	1.2	1.2
140	1.5	1.5





## Z-Axis Resolution





"So how am I supposed to look at 800 images?"

*"Get in the volume"*



Stack view



MRI



Coronal SAb-VR



3D VR





European Guidelines on Quality Criteria for CT


Diagnosis (image criteria)

Anatomical structures that should be visible to allow accurate diagnosis

and the degree of visibility with set terms

and structures detectable

and structures critical for



European Guidelines on Quality Criteria for CT

- Diagnostic requirements (image criteria)
- Technical requirements
- Personnel













No Parking  
Emergency Access



















Round 7: Picking round

- 1. Can you meet the demand?
- 2. If you use the same total investment for three projects, which one will (a) require the highest cost? (b) produce the worst-case quality?

Round 8: What's the best?

Blue screen with text on a monitor stand.























Round 4 - picture round

11. Can you name the Association of... of... of the...?

[Small monitor displaying a blue screen]













Round 6: picture round  
Bonus point  
1. What's the link between these two?

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