

## Xray production Physics cheat sheet

### Xray production

- Cathode
- Anode
  - Focal spot – small focal spots produce less blurring
  - Heel effect – beam intensity is higher on cathode side
  - Anode angle – place thicker part of body on cathode side
- Xray spectrum
  - Bremsstrahlung – braking radiation, 80% of xray beam
  - Characteristic xray - peaks
- Kilovoltage peak
- Milliampere-seconds
- Xray tubes – filament, cathode, tungsten anode
- Interaction with matter
  - Compton scatter – main cause of scattered radiation, dominates >30keV
  - Coherent scatter – dominates <10keV, least radiation
  - Photoelectric effect – dominates <30keV, soft tissue contrast in mammo
- Filters – molybdenum filter removes unwanted part of molybdenum spectrum in mammo
- Magnification – lateral CXR magnifies right ribs
- Grids
- Beam collimators
- Air gap technique
- Xray film
- Image intensifier
  - Entrance phosphor
- Digital radiography
  - Computed radiography
  - Direct digital radiography
- Mammography
- Xray artifacts