

Nonlinear effects – Safety Aspects

1. The propagation of ultrasound waves is

- a.) sometimes a nonlinear process
- b.) fundamentally a nonlinear process
- c.) only at the surface a nonlinear process
- d.) around the focal zone a nonlinear process

2. What are the effects of nonlinear propagation ?

- a.) generation of harmonics
- b.) acoustic shocks
- c.) acoustic saturation
- d.) all above

3. For which mode the “finite amplitude effect” may be ignored ?

- a.) PW-Colour Doppler
- b.) Harmonic Imaging
- c.) CW Doppler
- d.) ARFI Imaging

4. Which part of the ultrasound wave travels a little bit faster ?

- a.) the rarefactional part
- b.) the compressional part
- c.) no part
- d.) the part that is emitted from the transducer last

5. What is the main safety concern of nonlinear effects ?

- a.) that harmonics are generated that reduce the quality of the image
- b.) that one part of the wave propagates faster which leads to false measurements
- c.) none
- d.) enhanced heating in soft tissue

correct answers:

- | |
|---------------------------------------|
| 1b: fundamentally a nonlinear process |
| 2d: all above |
| 3c: CW Doppler |
| 4b: the compressional part |
| 5d: enhanced heating in soft tissue |
