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Radio & Radar Techniques by A.T. Stavor

The helix wave on page 718 "for helix sizes used in practice, it is found that the wave runs around the turns of the helix with a velocity very nearly equal to that of light. The thickness of the wire is unimportant provided the spacing between the turns of the helix is somewhat greater than the thickness."

Let the radius of turns of helix be "a" with a pitch "d".  
The helix angle "α" becomes  $\alpha = \tan^{-1} d/2\pi a$ .  
The longitudinal velocity of the wave is  $v = c \sin \alpha$  where c is velocity of light.

The characteristic impedance of a helix is  
 $Z_h = 30 \cot \alpha$  ohms and hold up to  $a = \lambda \sin(\alpha/2)$   
Same discussion in Fields & Waves by Ramo & Whinnery.

This is a lot of baloney. Vero Fletcher and I built a wide variety of these coils during 1964. None worked as phase reversing.