

Abstract Submitted  
for the NWS08 Meeting of  
The American Physical Society

**Characteristics of Waves in Plants** ORVIN WAGNER — In my older literature I didn't recognize that plant frequencies are isotropic. I use the idea, however, in equating vertical and horizontal frequencies to get vertical to horizontal velocity ratios. In these calculations I use averages of reciprocals of representative samplings of vertical and horizontal internodal spacings  $A_v$  and  $A_h$ . The resultant equation is  $v_v A_v = v_h A_h$  or  $v_v / v_h = A_h / A_v$ . These velocity ratios can also be obtained by direct measurement or by taking ratios of needles per unit length in some cases. These ratios are related to the shape of the plant due to gravity interaction, for example for p.pine 3/1 or for apple 4/3. The velocity increases with the plant part's angle to the horizontal. It is possible that waves in plants are related to sound like waves in WIMPS (if WIMPS are the actual particle) because of their very low velocities (larger than ionic velocities, near 5 m/s outside of plants, 1.25 m/s on sun's surface) both inside and outside of plants. Some object to my approach because they say the WIMP density could not be large enough on the earth's surface. My experiments seem to suggest otherwise. See 1999 Physics Essays 12:3-10 and my website [home.budget.net/~oedphd](http://home.budget.net/~oedphd).

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Date submitted: 28 Apr 2008

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