

**FAX COVER PAGE**

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REFER TO:	LIGO-L96
SUBJECT:	

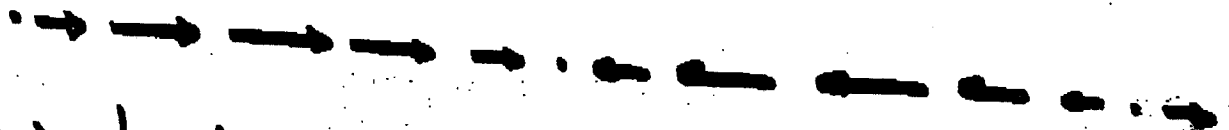
NUMBER OF PAGES FAXED INCLUDING THIS COVER SHEET:	9
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NOTE:

# Seismic Waves

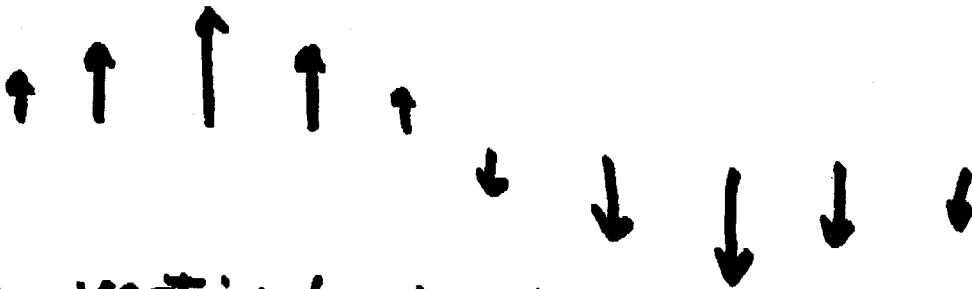
come in 3 kinds:

- P waves : longitudinal



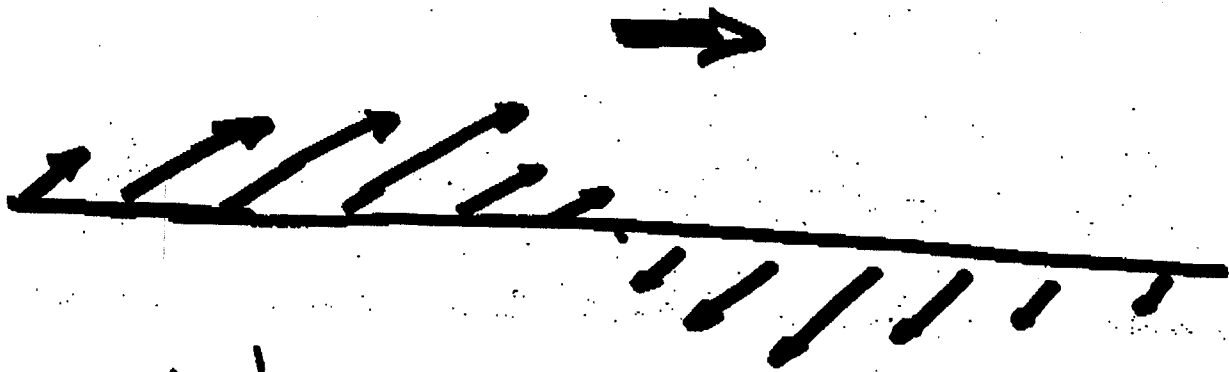
⇒ horizontal displacements  
and strains

- SV waves : transverse



⇒ vertical displacements  
and tilts

- SH waves: transverse



⇒ horizontal displacements and shears

Surface waves come in  
2 kinds:

- Rayleigh waves: P + SV  
(horiz, vert, strain, tilt)
- Love waves: SH  
(horiz, shear)

## Microseismic Peak:

Period 6-8 sec

Always a Rayleigh wave,  
sometimes also a Love wave.

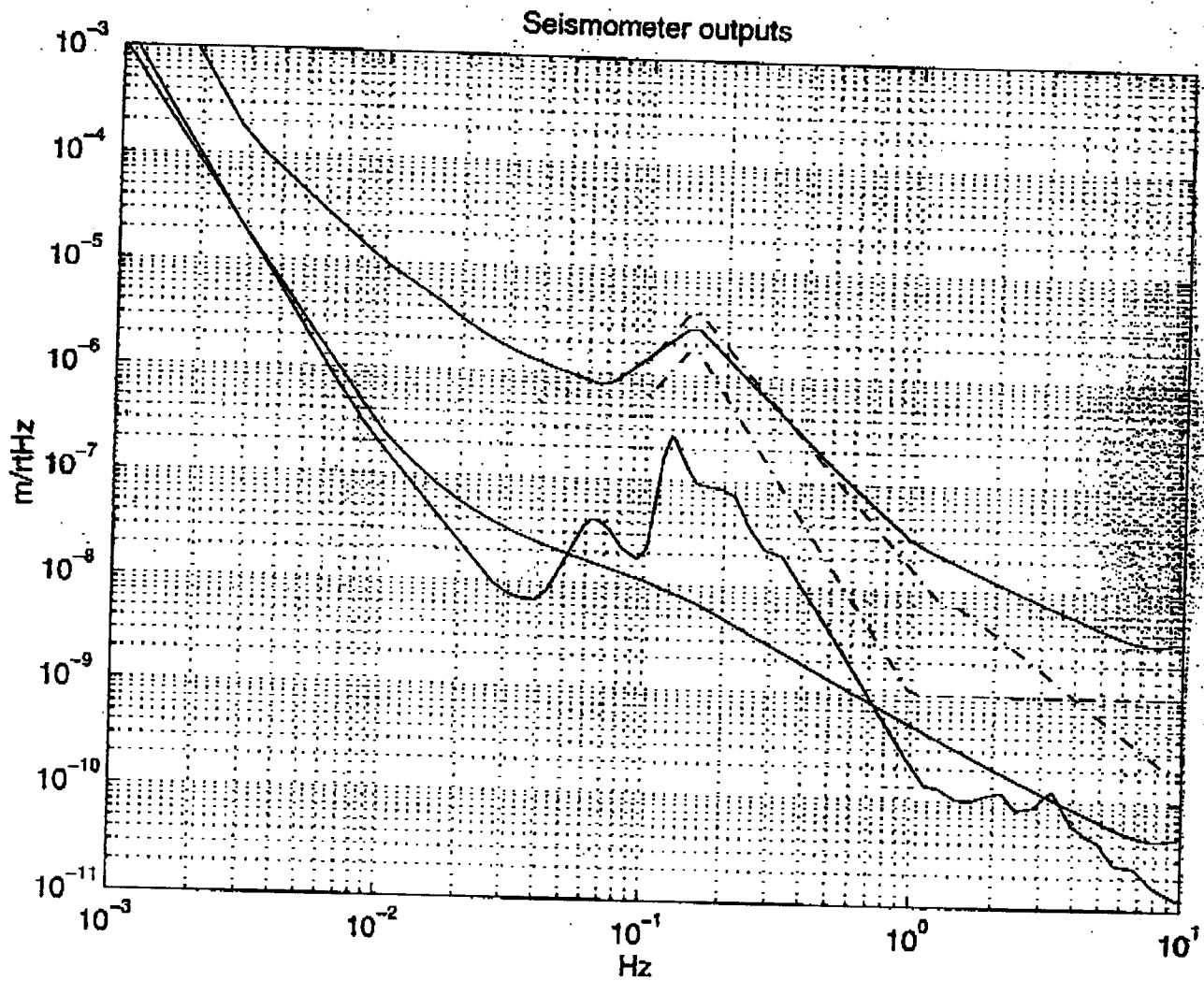
Wave velocity:  $v \sim 3 \text{ km/sec}$

Amplitude  $x \sim \text{micron rms}$

Wave number  $k \sim 3 \cdot 10^{-4} \text{ m}^{-1}$

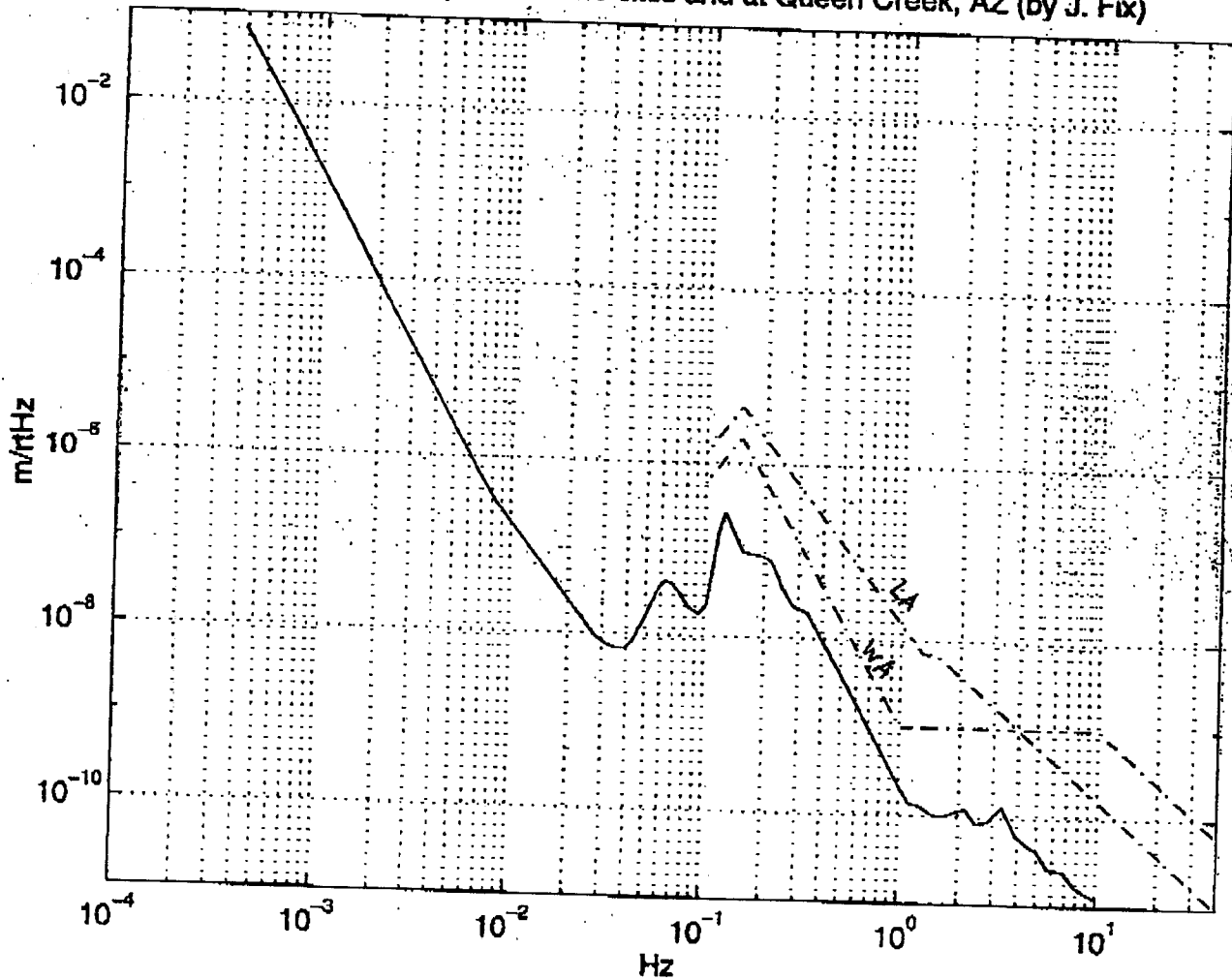
$$\Rightarrow kx \sim 3 \cdot 10^{-10}$$

(strain, tilt, shear)



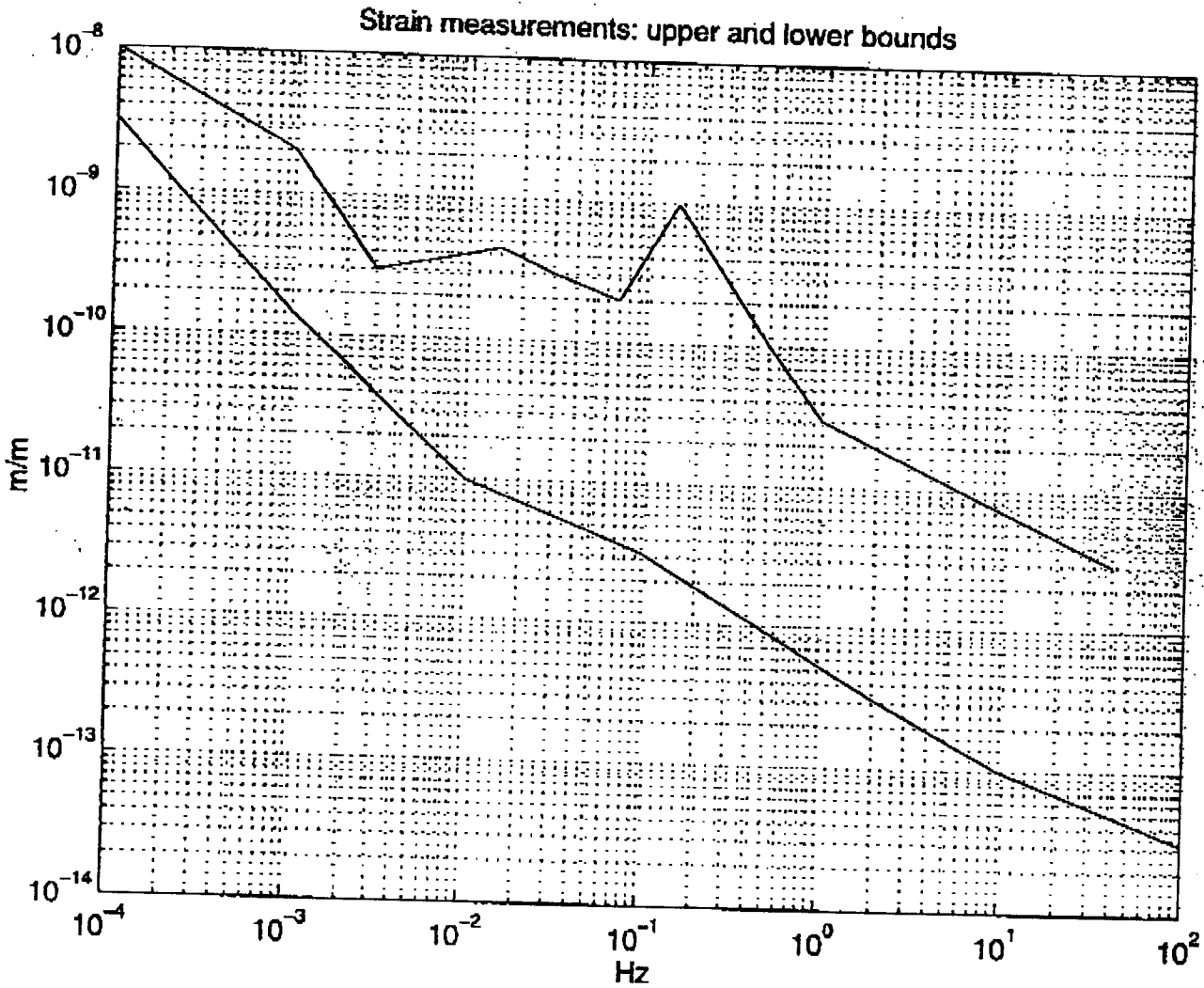
From strain:  $\psi = \epsilon k^{-1} (1 + gk/\omega^2)$

Ground motion spectra at the sites and at Queen Creek, AZ (by J. Fix)



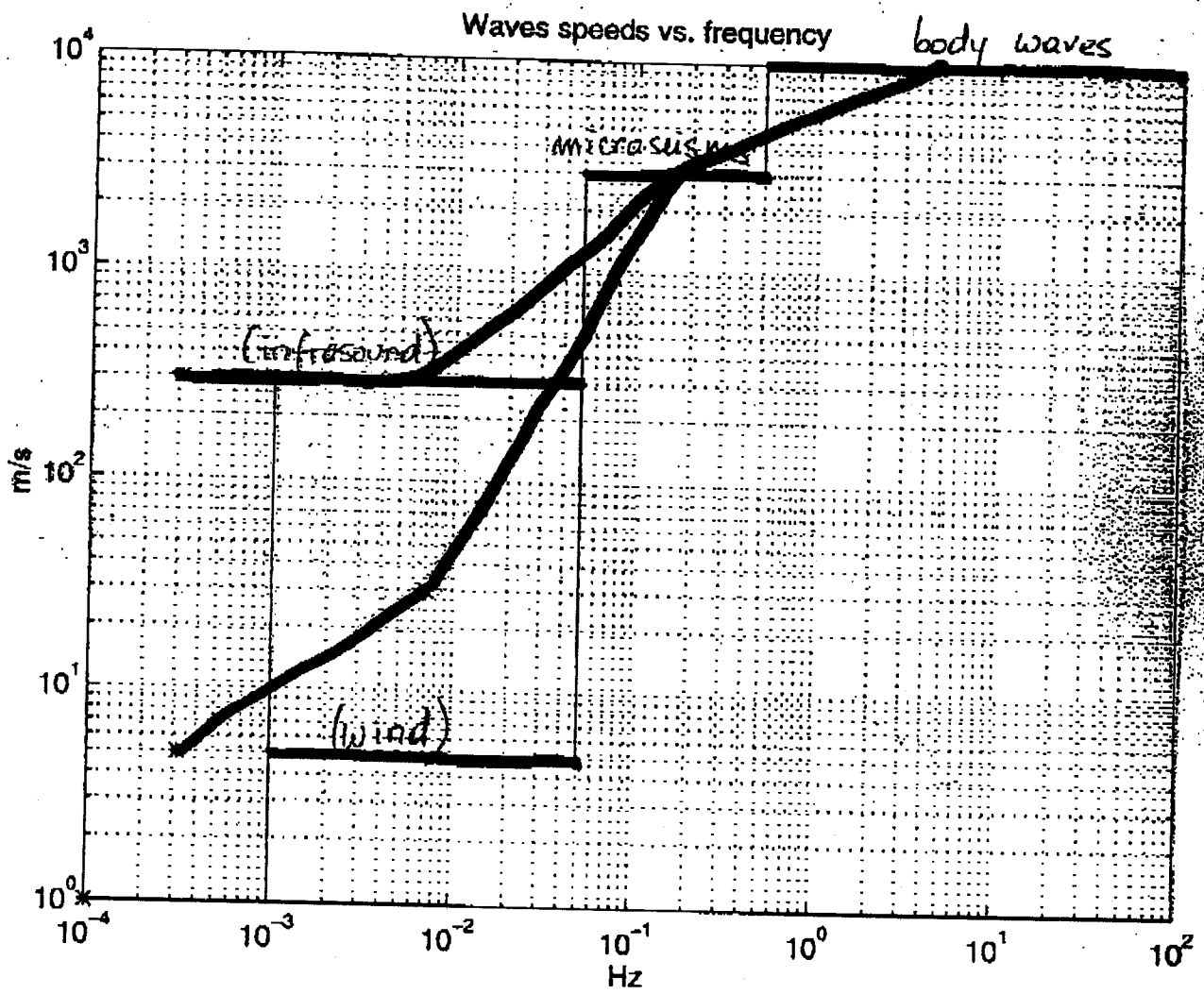
"Ambient Earth motion in the period range  
 from 0.1 to 2560 sec", J. Fix, Bull Seism Soc. Am  
 62, 1753 (1972)

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"Strainmeters and tiltmeters"

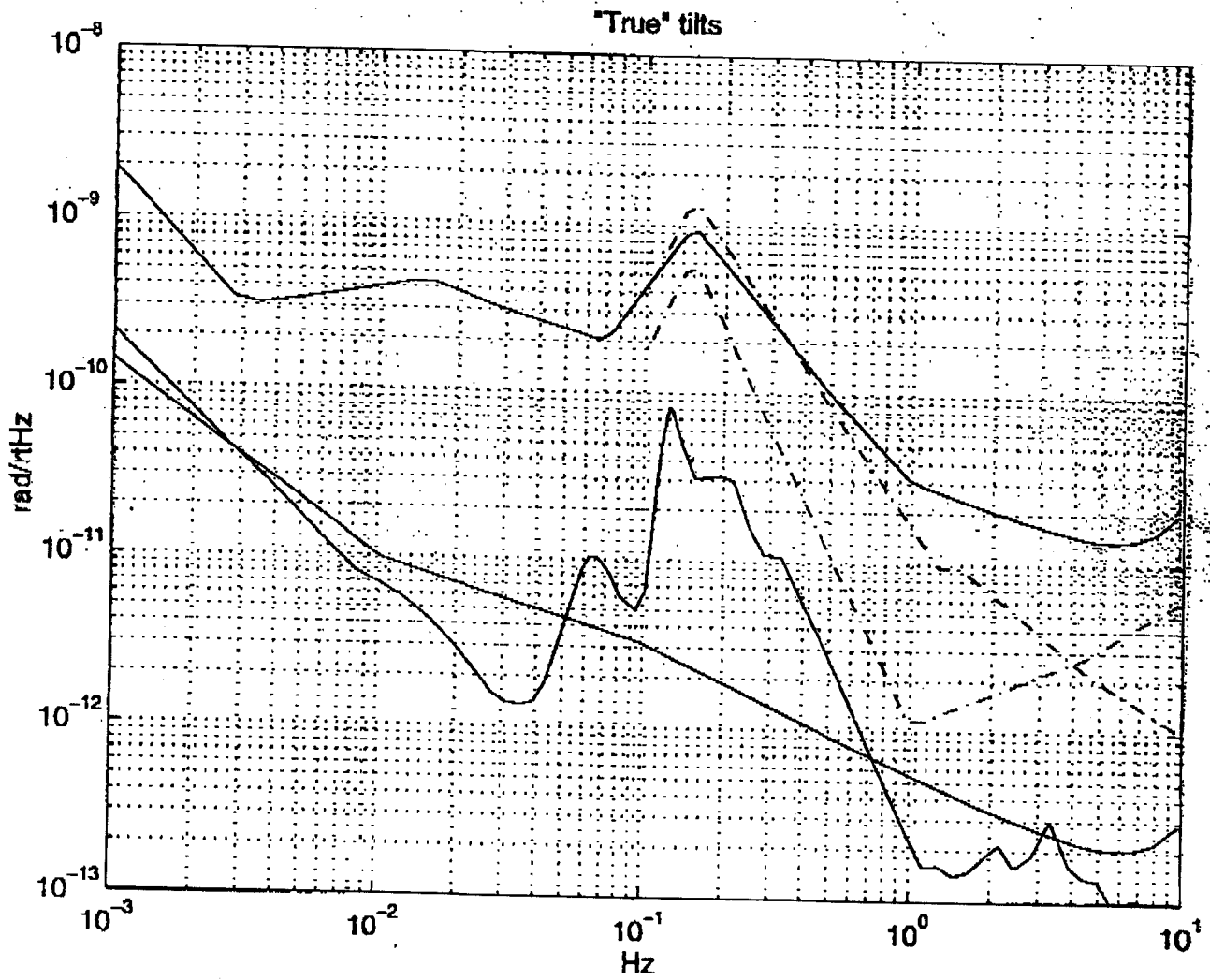
D.C. Agnew, Rev. Geophys. 24, 579 (1986)



[Aqnew]



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$$\theta = \epsilon$$

$$= kx / (1 + gk/\omega^2)$$



from seismometer