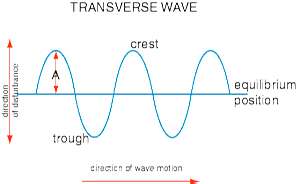
**Integrated Sound Chapter 5**

**p56 listen to both speaker of stereo system with AM radio waves-weeoo sound is great/with one ear toward speaker, move head slowly back and forth/try it with a more normal annoying sound**

**-transverse waves caused the distorted sounds that you heard as they are easier to visualize**

[](http://images.search.yahoo.com/images/view;_ylt=A0PDoYDuYnpPYDAAaraJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Dtransferse%2Bwaves%26n%3D30%26ei%3Dutf-8%26y%3DSearch%26tab%3Dorganic%26ri%3D19&w=559&h=343&imgurl=equalrightsforall.net%2Fweb%2520p20%2F033%2520transverse%2520wave.gif&rurl=http%3A%2F%2Fequalrightsforall.net%2Fmechanical_waves%2F001_mechwave.htm&size=7.1+KB&name=Mechanical+Waves&p=transferse+waves&oid=cee2b93a4617894f3bc60c94894749d2&fr2=&fr=&rw=transverse+waves&tt=Mechanical%2BWaves&b=0&ni=80&no=19&tab=organic&ts=&sigr=11ulrk29s&sigb=138jfqvun&sigi=11rj9f272&.crumb=W6bKGNFDMaE)

**Two people Hold rope to try**

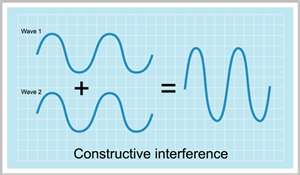
**1.one goes up**

**2.both go up**

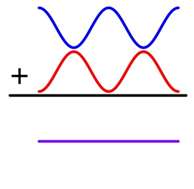
**3.one up and one down**

**Interference-**

**Constructive interference-**

[](http://images.search.yahoo.com/images/view;_ylt=A0PDoTBQYnpPrW0AaMuJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Dconstructive%2Binterference%26n%3D30%26ei%3Dutf-8%26y%3DSearch%2BImages%26tab%3Dorganic%26ri%3D4&w=640&h=375&imgurl=obergscience.com%2F_wizardimages%2Fconstructive%2520interference2.jpg&rurl=http%3A%2F%2Fobergscience.com%2Fpage3.htm&size=143.8+KB&name=Helpful+Stuff&p=constructive+interference&oid=6c82918391abefb743cbf1a395a3179f&fr2=&fr=&tt=Helpful%2BStuff&b=0&ni=80&no=4&tab=organic&ts=&sigr=111v2uhhc&sigb=13n97n14p&sigi=11v9ci3ct&.crumb=W6bKGNFDMaE)

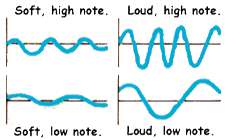
**Destructive interference-**

[](http://images.search.yahoo.com/images/view;_ylt=A0PDoYCOYnpPrg4AQdiJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Ddestructive%2Binterferenc%26n%3D30%26ei%3Dutf-8%26y%3DSearch%26tab%3Dorganic%26ri%3D0&w=295&h=288&imgurl=www.black-holes.org%2Fimages%2FDestructiveInterference.jpg&rurl=http%3A%2F%2Fwww.black-holes.org%2Fgwa4.html&size=11+KB&name=Destructive+interference.+Because+the+blue+and+redwaves+are+...&p=destructive+interferenc&oid=243f8d48c373340ed5a7736337da5dec&fr2=&fr=&rw=destructive+interference&tt=Destructive%2Binterference.%2BBecause%2Bthe%2Bblue%2Band%2Bredwaves%2Bare%2B...&b=0&ni=120&no=0&tab=organic&ts=&sigr=114kf8mkn&sigb=13efou7sf&sigi=11m1i42o2&.crumb=W6bKGNFDMaE)

**-If the total amount of shifts is a wavelength or multiples of a wave length, the two sets of waves will still be in sync(in phase), and they’ll interfere constructively which gives a loud spot**

**-if the total amount of shift is a half a wavelength, or odd multiples or half a wavelength, the two sets of waves will be totally out of sync (out of phase) and they will interfere destructively and give a quiet spot**

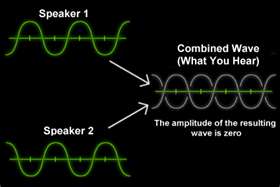
**-spatial pattern-**

[](http://images.search.yahoo.com/images/view;_ylt=A0PDoTA4Y3pPp0oA5_qJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Dloud%2Band%2Bsoft%2Bsound%2Bwaves%26n%3D30%26ei%3Dutf-8%26y%3DSearch%26tab%3Dorganic%26ri%3D13&w=342&h=214&imgurl=library.thinkquest.org%2F5116%2Fimages%2Fsoundwave2.GIF&rurl=http%3A%2F%2Fwww.umanitoba.ca%2Foutreach%2Fcrystal%2Fbeaufort%2520resources%2FSounds%2520Around%2520Us%2520-%2520BDEC-Final.doc&size=11.7+KB&name=figure+4+soft+and+loud+high+and+low+volume+and+pitch&p=loud+and+soft+sound+waves&oid=98afd414666ac2fff3c2153832646dcb&fr2=&fr=&tt=figure%2B4%2Bsoft%2Band%2Bloud%2Bhigh%2Band%2Blow%2Bvolume%2Band%2Bpitch&b=0&ni=80&no=13&tab=organic&ts=&sigr=1370l9822&sigb=13h9iingm&sigi=11ht78df4&.crumb=W6bKGNFDMaE)

**-when the sound coming from one speaker is shifted by half a wavelength with respect to the sound from the other speaker, those tow waves are out of sync and create a soft spot**

**-if you move, the sound from the two speakers will shift an entire wavelength with respect to each other and they are back in step which creates a loud spot**

**-with a smaller wavelength, the sound waves from the two speakers get in and out of sync in a shorter distance which means that the loud and soft spots are closer together with higher frequencies**

**[](http://images.search.yahoo.com/images/view;_ylt=A0PDoX4iZHpP2FMAmVyJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Dsound%2Bbeats%2Bphysics%26n%3D30%26ei%3Dutf-8%26y%3DSearch%26fr%3Dyfp-t-701-1%26tab%3Dorganic%26ri%3D36&w=425&h=284&imgurl=library.thinkquest.org%2F19537%2Fmedia%2Fdiagram8.gif&rurl=http%3A%2F%2Flibrary.thinkquest.org%2F19537%2FPhysics5.html&size=13.4+KB&name=beats+now+that+we+know+what+happens+when+two+sound+waves+with+the+same+...&p=sound+beats+physics&oid=0cfd4af8827ebabae13fdfe346914c4f&fr2=&fr=yfp-t-701-1&tt=beats%2Bnow%2Bthat%2Bwe%2Bknow%2Bwhat%2Bhappens%2Bwhen%2Btwo%2Bsound%2Bwaves%2Bwith%2Bthe%2Bsame%2B...&b=31&ni=80&no=36&tab=organic&ts=&sigr=11hb6ok11&sigb=13q2hv9hp&sigi=11frt14st&.crumb=W6bKGNFDMaE)**

**p61 electric guitar-mess with the tension of two adjacent strings until they have about the same pitch then pluck them at the same time and look for the wah-wah sound where the sound get s alternately loud and soft**

**p61 rod-suspend one rod from a string and hit the other rod and make the rod spin-listen for the wah-wah sound/change the speed of the spinning rods and compare the wah-wah sounds**

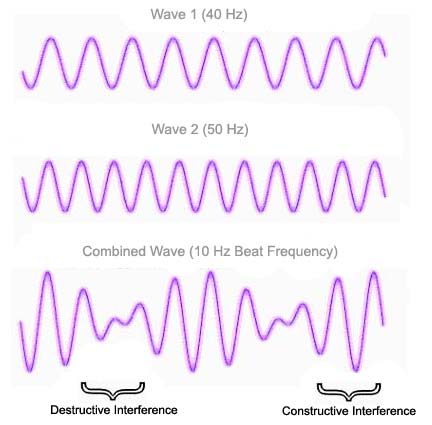
**guitar strings**

**What you should have heard but didn’t.**

**-the sound waves should add together like the sound waves form the two speakers**

**-you should have detected constructive interference(louder sound), and destructive interference(softer sound)**

**What you heard and why**

[](http://images.search.yahoo.com/r/_ylt=A0PDoX6CZHpP5DoAfKmjzbkF;_ylu=X3oDMTBpcGszamw0BHNlYwNmcC1pbWcEc2xrA2ltZw--/SIG=120o44m1a/EXP=1333449986/**http%3a/www.podcomplex.com/guide/physics.html)

**Beats-**

**-the closer together in frequency the two sounds, the farther apart the loud and soft spots are in the beats**

**-the closer together the two frequency, the slower the beats**

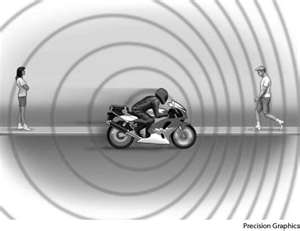
**-as the two frequencies get closer and closer to being the same, the beats become so slow that eventually you don’t even notice them**

**-if the two frequencies are exactly the same, there aren’t any beats at all**

**-try to move the tension around and try it**

**Rod action**

**doppler effect-**

[](http://images.search.yahoo.com/images/view;_ylt=A0PDoTBpY3pPilIAnSiJzbkF;_ylu=X3oDMTBlMTQ4cGxyBHNlYwNzcgRzbGsDaW1n?back=http%3A%2F%2Fimages.search.yahoo.com%2Fsearch%2Fimages%3Fp%3Dsound%2Bdoppler%2Beffect%26n%3D30%26ei%3Dutf-8%26y%3DSearch%26tab%3Dorganic%26ri%3D0&w=533&h=411&imgurl=images.yourdictionary.com%2Fimages%2Fscience%2FASdopple.jpg&rurl=http%3A%2F%2Fimages.yourdictionary.com%2Fdoppler-effect&size=16.4+KB&name=Doppler+effect+-+Images&p=sound+doppler+effect&oid=14ea5ed0d1b30475d59fd5315e8a1a8b&fr2=&fr=&tt=Doppler%2Beffect%2B-%2BImages&b=0&ni=80&no=0&tab=organic&ts=&sigr=11f9j2ovo&sigb=13bo73lu9&sigi=11lm2a306&.crumb=W6bKGNFDMaE)

**-when the sound is moving away from you, the sound waves behind the source stretch out creating a lower frequency**

**-you then hear a slightly higher frequency sound from the side moving toward you and a slightly lower frequency sound the side moving away from you**