



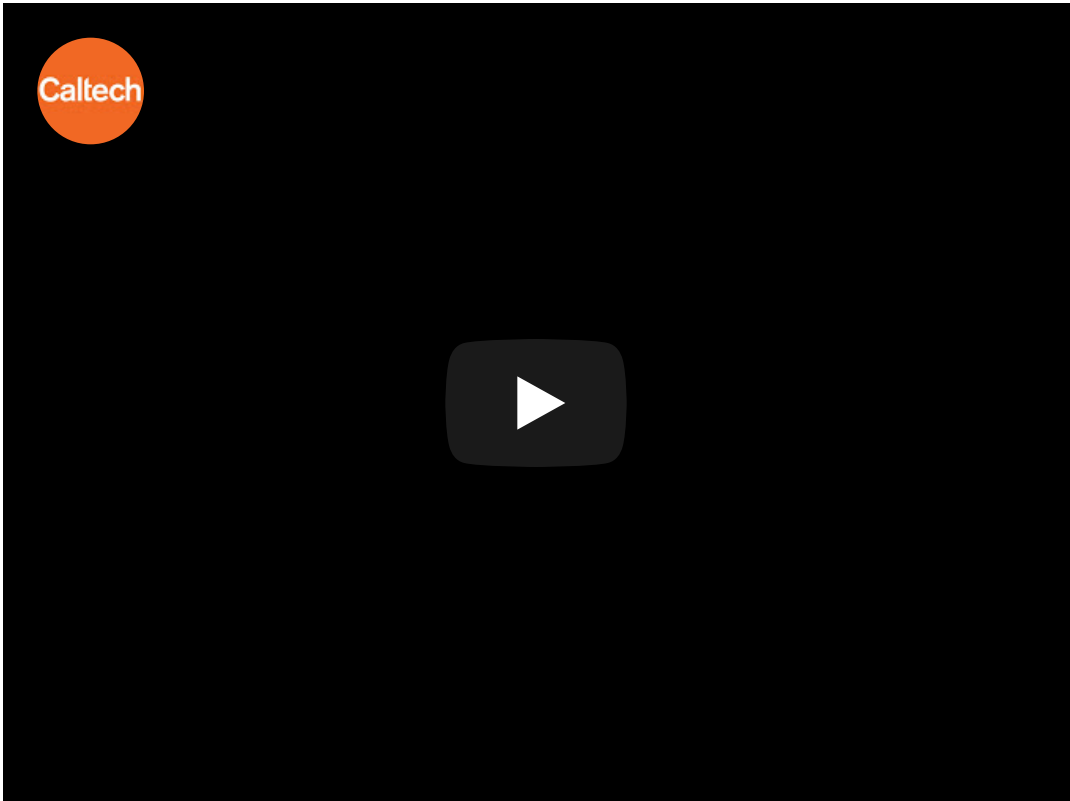
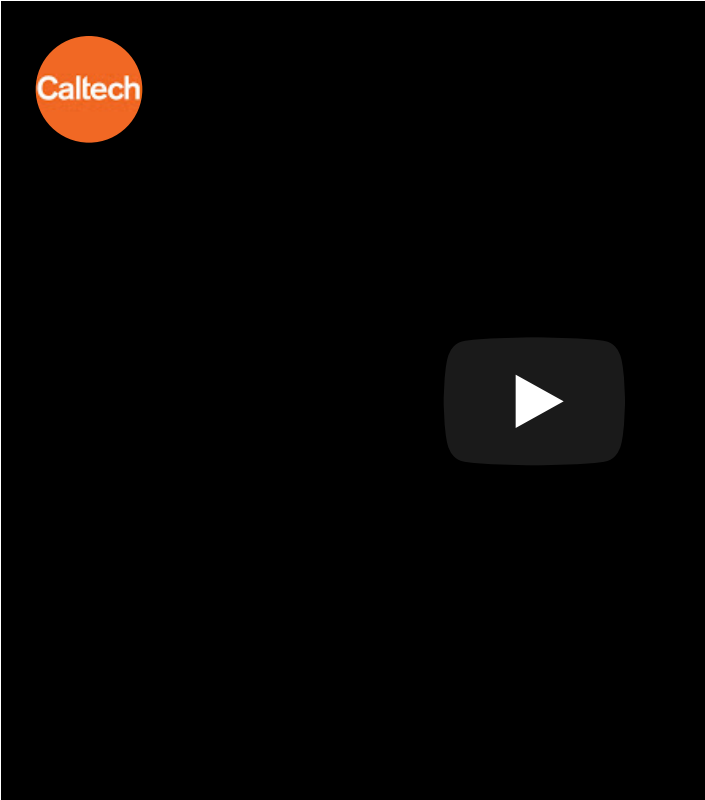
17FA_PHY_211_A Vibrations, Waves, and Optics

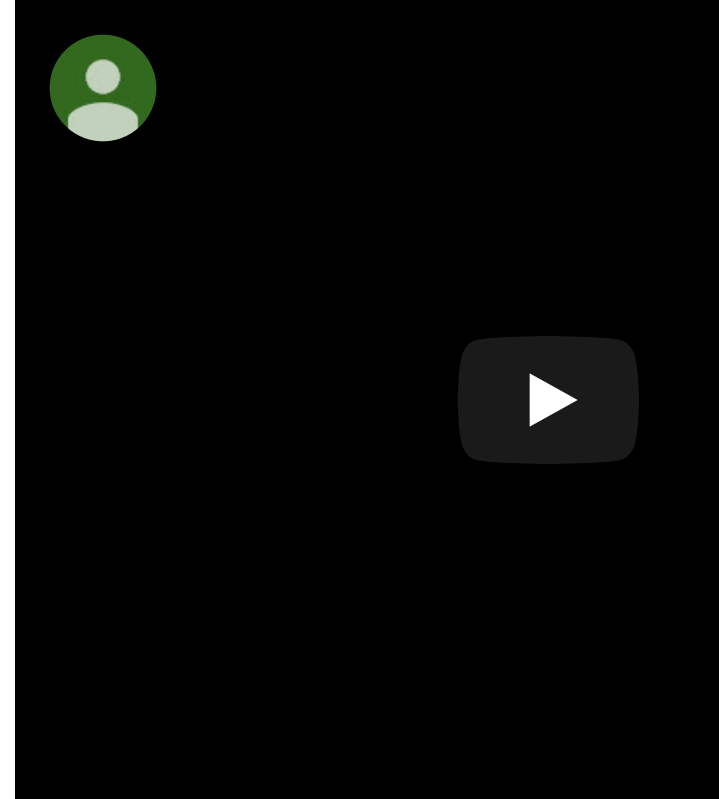
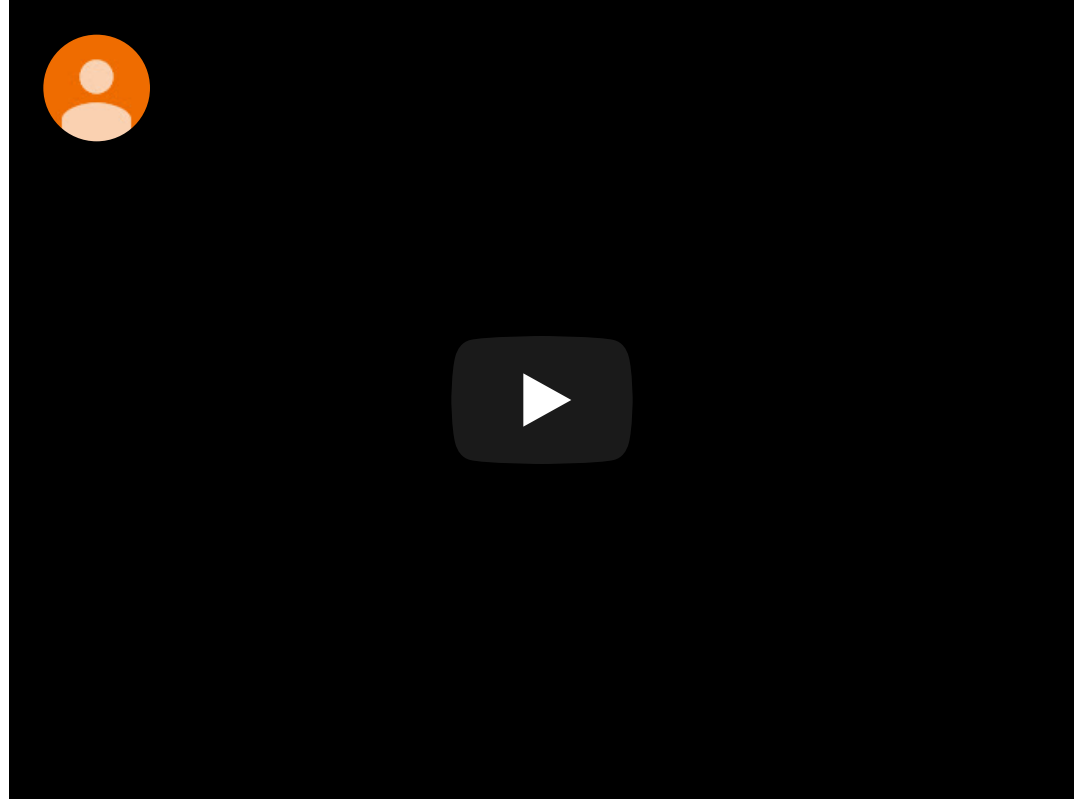
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Schedule

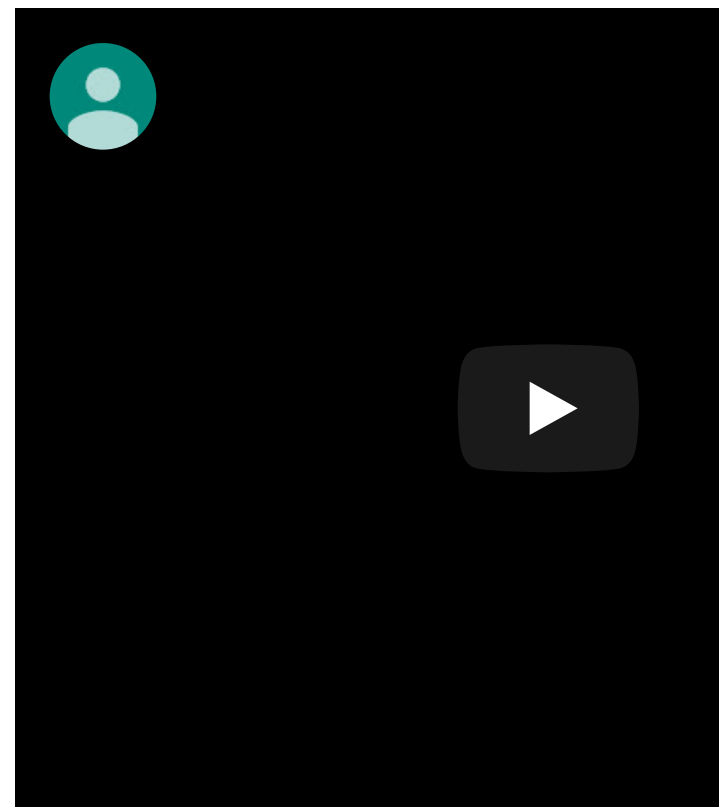
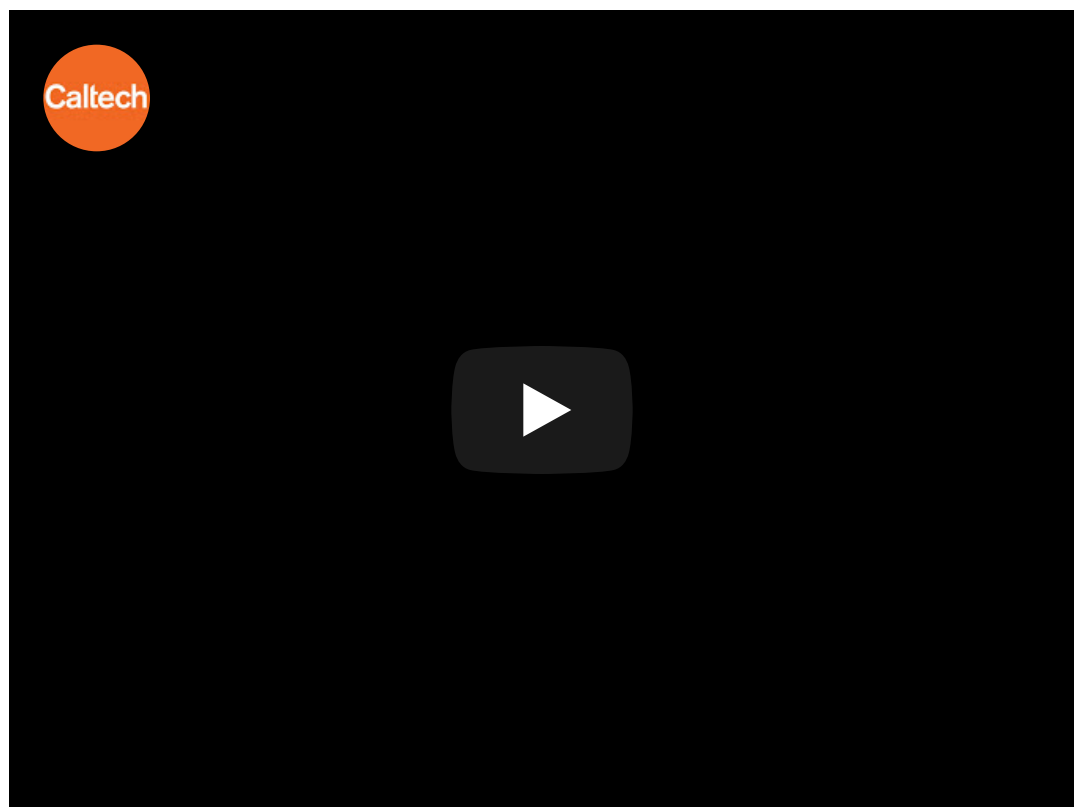
Physics 2017 Schedule

Week Beginning	Monday	Tuesday (Lab Day)	Wednesday
21-Aug			
28-Aug	<p>14.1 Simple Harmonic Motion and Circular Motion</p> <p>SHM and circular motion simulation (On pull-down Applet menu click on oscillations, then simple harmonic motion)</p> <p>14.2 Energy in SHM</p> <p>Work by a spring (On pull-down Applet menu click on Work and Energy, then Work by a Spring)</p> <p>Concept Problems: 14.3,6,11,12</p>	<p>0: Introduction to Mathematica</p>	<p>14.3 Some Oscillator Systems</p> <p>Pendulum simulation (click on pendulum a</p> <p>Problems: 14.48,52,62,71</p>
4-Sept	<p>14.5 Driven Oscillations and Resonance</p> <p>Driven harmonic motion simulation 1 (click on "Driven harmonic motion")</p> <p>Driven oscillation simulation 2</p> <p>Concept Problems 14.14,19,20</p>	<p>Exp.1 Simple Pendulum, Small/Large Amplitude</p>	<p>14.5 Driven Oscillations and Resonance (c</p> <p>Driven damped simulation 1</p> <p>Problems: 14.76,87,106</p>
11-Sept	<p>Homework problem solving</p> <p>Classroom Exercises</p> <p>No Assignment Today</p>	<p>Exp. 2 Physical Pendulum, Damping</p>	<p>15.1 Simple Wave motion</p> <p>Mathematica wave pulse</p> <p>Wave simulation (Click on "Transverse and long "How a wave propagates")</p> <p>Problems: 15.1,30,32</p>
18-Sept	<p>15.1-3 Energy transport and wave intensity</p> <p>Concept Questions: 15.3,4,5</p>	<p>Exp. 3: Damped, Driven Oscillator, Resonance</p>	<p>15.1-3 Waves in 3D, Speed of Sound (p. 6</p> <p>Sound simulation (Click on pressure versu</p> <p>15.4 Waves Encountering Barriers</p> <p>15.5 Doppler Effect</p> <p>Wave reflection simulation ((Go to Animatic</p> <p>and choose Waves->Transverse Waves->T</p>

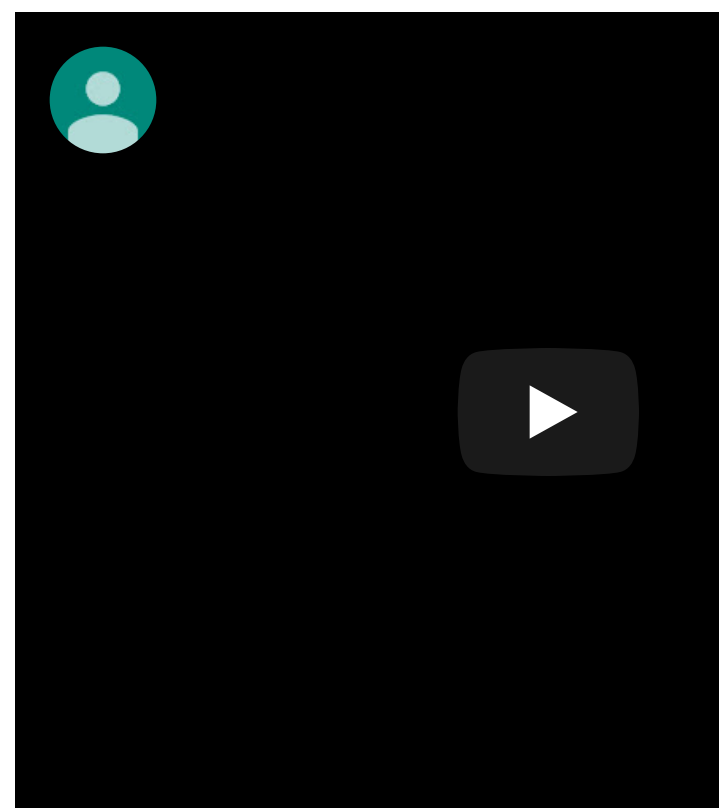
			<p>Reflection)</p> <p>Doppler effect simulation (Go to Animation and choose Doppler Effect)</p> <p>Problems: 15.36,41,61,72</p>
25-Sept	<p>Test 1</p> <p>Chapters 14-15</p>		Class canceled
2-Oct	<p>16.3 Superposition of Standing Waves (pp. 550-551)</p> <p>Flutes versus clarinets simulation</p> <p>Clarinet versus trumpet simulation</p>	Exp. 4 Speed of Sound in Air	<p>16.3 Harmonic Analysis & Synthesis, Wave Dispersion (pp. 551-554)</p> <p>Fourier analysis (Click on Fourier analysis)</p> <p>Phase versus group velocity simulation</p> <p>Problems - Due Wed. Oct 9: 16.8,9,52,57</p>
9-Oct	<p>30.1-2 Maxwell's Displacement Current</p> 	Exp. 5 Vibrations of a String	<p>30.3 Wave Equation for EM Waves</p>  <p>CircPol.swf</p> <p>Problems - Due Fri. Oct 13: 30.1,4,15</p>
16-Oct	31.1-2 Speed of light, Propagation of Light	Exp. 6 Resonant Air Column	31.3 Reflection and Refraction



Huygen's principle simulation



Problems (Due Oct 18):
30.21,37,46



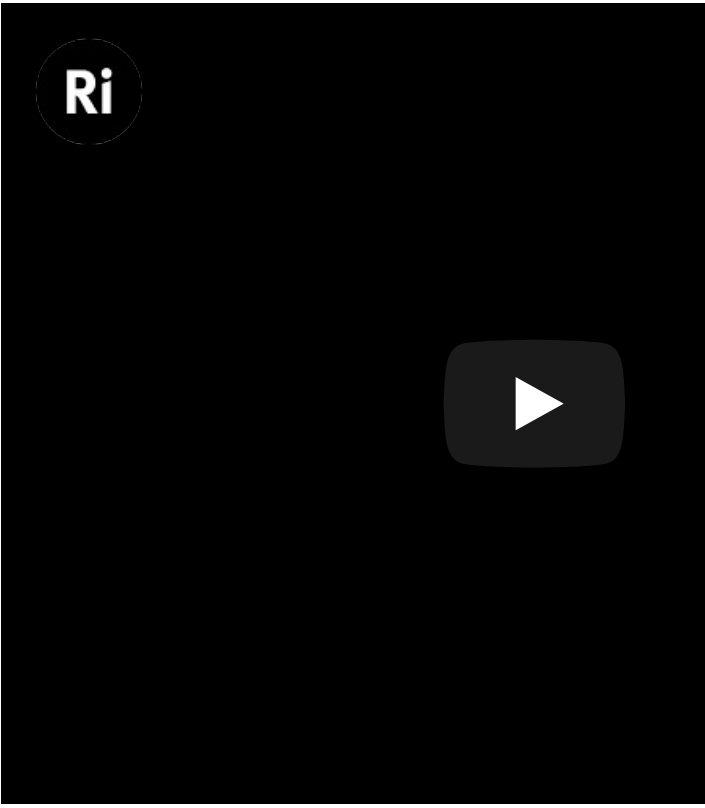
Problems - Due Fri. Oct
31.4,5,30,40

23-Oct

Test 2
Sections 15.5, 16.1-3, Chap 30, 31.1-3


Exp. 7: Total
Internal
Reflection

Derivation of the laws of reflection and refraction

		Problems (Due Fri. Oct 27): 31.11,54,61	
30-Oct	32.1 Mirrors Mirror simulation (Click on "Plane Mirror") Optics bench simulation problems (Due Fri. Nov 4): 32.6,7,24,25,26,27	Exp. 8 Polarization of EM Waves	32.1 More Mirrors
6-Nov	32.3-4 Aberrations, Optical Instruments Human eye simulation Microscope and Telescope (Play with Optics Bench simulation)	Exp. 9 Geometrical Optics - Mirrors and Lenses	33.1-3 Phase Differences, Interference Mechanical Universe Chapter 40: Optics Double slit interference simulation (Click on 'interference') Thin film interference simulation (Click on 'interference')
13-Nov	33.4 Diffraction 33.5 Using Phasors to Add Harmonic Waves phasor application	Exp. 10 Interference and Diffraction	33.6 Fraunhofer/Fresnel Diffraction Problems (with solutions) 33.27,36,37,46
27-Nov	Holograms Jeong article on holograms	Exp. 11 Recording a Reflection Hologram	33.7-8 Diffraction & Resolution  Very Large Array telescope video

Final Exam: Thurs. 12/7, 3-5 pm

Last modified: Wednesday, 29 November 2017, 12:24 PM

 Moodle Docs for this page

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