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| <p><b>CLASS:</b><br/>1.) do something with quantum computing . . . how to make a qbit-- <a href="https://www.youtube.com/watch?v=zNzzGgr2mhk">https://www.youtube.com/watch?v=zNzzGgr2mhk</a>-- what quantum computers are <a href="https://www.youtube.com/watch?v=g_IaVepNDT4">https://www.youtube.com/watch?v=g_IaVepNDT4</a><br/>2.) retroactively, look at <a href="https://www.youtube.com/watch?v=8ORLN_KwAgs&amp;t">https://www.youtube.com/watch?v=8ORLN_KwAgs&amp;t</a> about <i>delayed choice quantum eraser double slit</i> experiment (very freaky);<br/>3.) then continue with The Elegant Universe--during video, talked about what strong force does (holds protons together in nucleus and weak force (creates new atoms after supernova via radioactive decay)); talked about how forces in Standard Theory are assumed to be particle interactions; stop at precision of universe</p> | <p><b>CLASS:</b><br/>1.) continue Elegant Universe;</p>   | <p><b>Day 3</b></p>   | <p><b>CLASS:</b><br/>1.) continue with Elegant Universe</p> | <p><b>Day 5</b></p>                                       |
| <p><b>HMWK:</b><br/>1.) journal;</p>  | <p><b>HMWK:</b><br/>1.) journal;</p>  |   | <p><b>HMWK:</b><br/>1.) journal;</p>                        |   |
| <p>2/13</p>   | <p>2/14</p>   | <p>2/15</p>   | <p>2/16</p>   | <p>2/17</p>   |
| <p><b>CLASS:</b><br/>1) mention Mr. White's triple binary star system <a href="https://exoplanets.nasa.gov/news/1672/discovery-alert-first-six-star-system-where-all-six-stars-undergo-eclipses/">https://exoplanets.nasa.gov/news/1672/discovery-alert-first-six-star-system-where-all-six-stars-undergo-eclipses/</a>;<br/>2.) talk about the precision of the universe--show video <b>The Fine Tuning of the Universe</b> . .which has good info but is the religious one);<br/>3.) run through discussion of alpha (use PowerPoint)<br/>4.) show video <b>Alpha Changing</b> talk about the consequences of having fundamental constants changing in light of the previous video about the fine tuning of our universe;</p>   | <p><b>CLASS:</b><br/>1.) intro Standard Model <a href="https://www.youtube.com/watch?v=Un1jXFzgo">https://www.youtube.com/watch?v=Un1jXFzgo</a> - look over ppt on the Standard Model;<br/>2.) look at video about "the beginning and progression onward" at <a href="https://www.youtube.com/watch?v=wNDGgL73ihY">https://www.youtube.com/watch?v=wNDGgL73ihY</a> "CLASS: Chronology of Universe"<br/>3.) look at un-narrated <a href="https://www.youtube.com/watch?v=DB8651JE3xo">https://www.youtube.com/watch?v=DB8651JE3xo</a> kibitz: as you go (inflation, quark asymmetry, why 1 Tev is important, quark clumping; deuterium and He nuclei formation, 50-50 point for energy/radiation distribution, the first neutral atoms and light free streaming, first generation stars, second generation stars, etc.);<br/>4.) look at preambles to <b>Cosmological Timeline</b> (temp/energy AND 2-sizes), then view timeline "</p> | <p><b>CLASS:</b><br/>1.) go through the <b>Fundamental Particles</b> and Forces ppt;<br/>2.) talk about <b>quarks</b>, look at ppt on quark charge;<br/>3.) find video on fundamental particles</p> | <p><b>Day 3</b></p>   | <p><b>FACULTY PROFESSIONAL GROWTH DAY</b> (no school)</p> |
| <p><b>HMWK:</b><br/>1.) journal;<br/>2.) from <b>13 Things That Don't Make Sense</b>, read the Prologue, pages 7-13</p>   | <p><b>HMWK:</b><br/>1.) journal;<br/>2.) from <b>13 Things That Don't Make Sense</b>, read the Prologue, pages 13-19</p>  | <p><b>HMWK:</b><br/>1.) journal;<br/>2.) from <b>13 Things That Don't Make Sense</b>, read pgs 19-25;</p>   |   |   |
| <p>2/20</p>   | <p>2/21</p>   | <p>2/22</p>   | <p>2/23</p>   | <p>2/24</p>   |

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| <b>PRESIDENT'S DAY</b> (no school--again, you lucky ducks)   | <b>CLASS:</b><br>1.) read science fiction stories about antimatter<br>2.) show <b>quarks changing colors</b> video;<br>3.) in preamble to talking about the Higgs field, give explanation of what mass is, then talked about how Higgs field replaces those ideas in the Standard Model;<br>4.) to animate Higg's field, show video<br><a href="https://www.youtube.com/watch?v=joTKd5j3mzk">https://www.youtube.com/watch?v=joTKd5j3mzk</a> (the quaint explanation);<br>2.) show the more sophisticated explanation of Higgs at<br><a href="https://www.youtube.com/watch?v=kixAljyfdqU">https://www.youtube.com/watch?v=kixAljyfdqU</a><br>3.) talk about how Higgs field isn't only source of mass--look at video at<br><a href="https://www.youtube.com/watch?v=Ztc6QPNUqls&amp;t=4s">https://www.youtube.com/watch?v=Ztc6QPNUqls&amp;t=4s</a> | <b>Day 5</b>   | <b>CLASS:</b><br>1.) read science fiction stories;<br>2.) talk about <b>13 Things</b> ; (Slipher and red-shift; Hubble graphs speed vs distance--farther out faster--universe expanding--so farther away implies higher relative speed--the prop. const is the Hubble constant; talk WIMPS and cosmic radiation (have students find video on Bubble Chmbr n Cosmic Radiation);<br>3.) talk about Zwicky's (spherical bastards) problem (stars at edge of galaxy moving too fast);<br>4.) talk about Vera Rubins fights for Zwicky's idea (answer: halo of dark matter explains high vel);<br>5.) look at atomic interactions video (first 30 seconds<br><a href="https://www.youtube.com/watch?v=gwl2ln9ujc">https://www.youtube.com/watch?v=gwl2ln9ujc</a> n all beta decay<br><a href="https://www.youtube.com/watch?v=2gK-bANOMaU">https://www.youtube.com/watch?v=2gK-bANOMaU</a> );<br>6.) how larger elements made using beta decay | <b>CLASS:</b><br>1.) begin to look at light as a particle: start with Photoelectric Effect;<br>2.) look at video on photoelectric effect at<br><a href="https://www.youtube.com/watch?v=MFPKwu5vugg">https://www.youtube.com/watch?v=MFPKwu5vugg</a><br>3.) show photoelectric demo at<br><a href="https://www.youtube.com/watch?v=v-1zjdUTu0o">https://www.youtube.com/watch?v=v-1zjdUTu0o</a><br>4.) talk about how light is produced by atoms;<br>5.) video summary how light is produced in an atom is at<br><a href="https://www.youtube.com/watch?v=N9nWdNadkIE">https://www.youtube.com/watch?v=N9nWdNadkIE</a> |
|  | <b>HMWK:</b><br>1.) journal;<br>2.) write three-sentence science fiction story that utilizes the idea of anti-particles   |  | <b>HMWK:</b><br>1.) journal;<br>2.) go to the "Secret Stuff" folder on the class Website and read "Drinking Heavy Water"  | <b>HMWK:</b><br>1.) journal  |
| 2/27   | 2/28  | 3/1  | 3/2   | 3/3  |
| <b>CLASS:</b><br>1.) sdd   | <b>Day 3</b>  | <b>CLASS:</b><br>0.) do orals on Friday?<br>1.) finish Elegant Universe; | <b>Day 5</b>  | <b>CLASS:</b><br>1.) orals<br>2.) at end, talk about "13 Things . . ."   |
| <b>HMWK:</b><br>1.)  |   | <b>HMWK:</b><br>1.) relax  |   | <b>HMWK:</b><br>1.) journal;   |
| 3/6  | 3/7   | 3/8  | 3/9   | 3/10   |
| <b>CLASS:</b><br>1.) look at light as a particle beginning with video on photoelect effect<br><a href="https://www.youtube.com/watch?v=MFPKwu5vugg">https://www.youtube.com/watch?v=MFPKwu5vugg</a><br>2.) show photoelect demo<br><a href="https://www.youtube.com/watch?v=v-1zjdUTu0o">https://www.youtube.com/watch?v=v-1zjdUTu0o</a><br>3.) talk about how light is produced by atoms;<br>4.) video summary--light produced in an atom at<br><a href="https://www.youtube.com/watch?v=N9nWdNadkIE">https://www.youtube.com/watch?v=N9nWdNadkIE</a><br>talk about emission spectra;<br>5.) look at silent video about emission and absorption spectra at<br><a href="https://www.youtube.com/watch?v=m69GjvN3n0M">https://www.youtube.com/watch?v=m69GjvN3n0M</a> ;<br>6.) talk about absorption spectra--look at flawed video at<br><a href="https://www.youtube.com/watch?v=XHpiJj3osTU">https://www.youtube.com/watch?v=XHpiJj3osTU</a><br>7.) show Spectroscope | <b>CLASS:</b><br>1.) introduce light as a wave with video at<br><a href="https://www.youtube.com/watch?v=Iuv6hY6zsd0">https://www.youtube.com/watch?v=Iuv6hY6zsd0</a> ;<br>2.) talk about electromagnetic radiation--start with how radio waves are produced and what you end up with;<br>3.) look at video (only partially good--at<br><a href="https://www.youtube.com/watch?v=hk63uUhkZH4">https://www.youtube.com/watch?v=hk63uUhkZH4</a>   | <b>Day 3</b>   | <b>CLASS:</b><br>1.) look at the nice summary of light:<br><a href="https://www.youtube.com/watch?v=IXxZRZxafEQ">https://www.youtube.com/watch?v=IXxZRZxafEQ</a><br>3.) talk about reflection;<br>4.) talk about Snell's Law and refraction;<br>5.) talk about lenses;<br>6.) briefly mention telescopes;<br>7.) show spherical mirror if time;<br>8.) do ray tracing exercise if time;   | <b>end of third quarter Day 5</b>  |

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| <b>HMWK:</b><br>1.) journal                     | <b>HMWK:</b><br>1.) journal  |   | <b>HMWK:</b><br>1.) relax |  |
| <b>Fourth Quarter, 2021-2022</b>                |  |   |                           |  |
| <b>MONDAY</b>                                   | <b>TUESDAY</b>   | <b>WEDNESDAY</b>  | <b>THURSDAY</b>           | <b>FRIDAY</b>  |
| 3/13  | 3/14   | 3/15  | 3/16                      | 3/17   |
| <b>CLASS:</b><br>1.) do <b>optics lab</b> stuff | <b>CLASS:</b><br>1.) talk about <b>Doppler Shift</b> -- look at video at <a href="https://www.youtube.com/watch?v=h4OnBYrbCjY">https://www.youtube.com/watch?v=h4OnBYrbCjY</a><br>2.) relevance to astronomy (start at about 1 minute)? <a href="https://www.youtube.com/watch?v=3mJTRXCMU6o">https://www.youtube.com/watch?v=3mJTRXCMU6o</a><br>3.) talk about how the sun produces spectral lines (need to talk about black body radiation first, then talk about how light progresses from core outward)<br>4.) spend a little time talking about telescopes (use video at <a href="https://www.youtube.com/watch?v=LzII1f3pp-8">https://www.youtube.com/watch?v=LzII1f3pp-8</a> ); | <b>CLASS:</b><br>1.) look at AP schedule and see who will be around when;<br>2.) talk about distance to celestial objects--<br>3.) astronomic unit;<br>4.) parsec;<br>5.) luminosity, energy density, and apparent brightness;<br>6.) standard candles;<br>7.) apparent magnitudes and absolute magnitudes;<br>8.) spectral classes <a href="https://www.youtube.com/watch?v=Y5VU3Mp6abi&amp;t=1s">https://www.youtube.com/watch?v=Y5VU3Mp6abi&amp;t=1s</a> | <b>Day 3</b>              | <b>CLASS:</b><br>1.) preamble to section (celestial sphere; plane, constellations; the Zodiac; celestial plane; seasons, years, etc.)--find good video for this . . .<br>2.) for fun, show " <b>night sky with various degrees of city light</b> ," then " <b>celestial sphere</b> ,"<br>3.) talk about types of year-- nice summary of earth information (sidereal day, size comparison to sun, etc.) <a href="https://ciechanow.ski/earth-and-sun/">https://ciechanow.ski/earth-and-sun/</a><br>4.) talk about "leap year" (find good video for this); |
| <b>HMWK:</b><br>1.) relax                       | <b>HMWK:</b><br>1.) journal;<br>2.) determine how far you are, in miles, from where you were in the galaxy when you were born  | <b>HMWK:</b><br>1.) journal;<br>2.) for fun, read the article at <a href="http://www.jpl.nasa.gov/news/news.php?feature=6223&amp;utm_source=iContact&amp;utm_medium=email&amp;utm_campaign=NASAJPL&amp;utm_content=daily20160330-2">http://www.jpl.nasa.gov/news/news.php?feature=6223&amp;utm_source=iContact&amp;utm_medium=email&amp;utm_campaign=NASAJPL&amp;utm_content=daily20160330-2</a>  |                           | <b>HAVE A GREAT SPRING BREAK</b>   |
| 3/20  | 3/21   | 3/22  | 3/23                      | 3/24   |
| <b>Spring Break</b>                             | <b>Spring Break</b>  | <b>Spring Break</b>   | <b>Spring Break</b>       | <b>Spring Break</b>  |
| 3/27  | 3/28   | 3/29  | 3/30                      | 3/31   |
| <b>Spring Break</b>                             | <b>Spring Break</b>  | <b>Spring Break</b>   | <b>Spring Break</b>       | <b>Spring Break</b>  |
| 4/3   | 4/4  | 4/5   | 4/6                       | 4/7  |
| <b>Day 5</b>                                    | <b>CLASS:</b><br>1.)   | <b>CLASS:</b><br>1.)  | <b>CLASS:</b><br>1.)      | <b>Day 3</b>   |