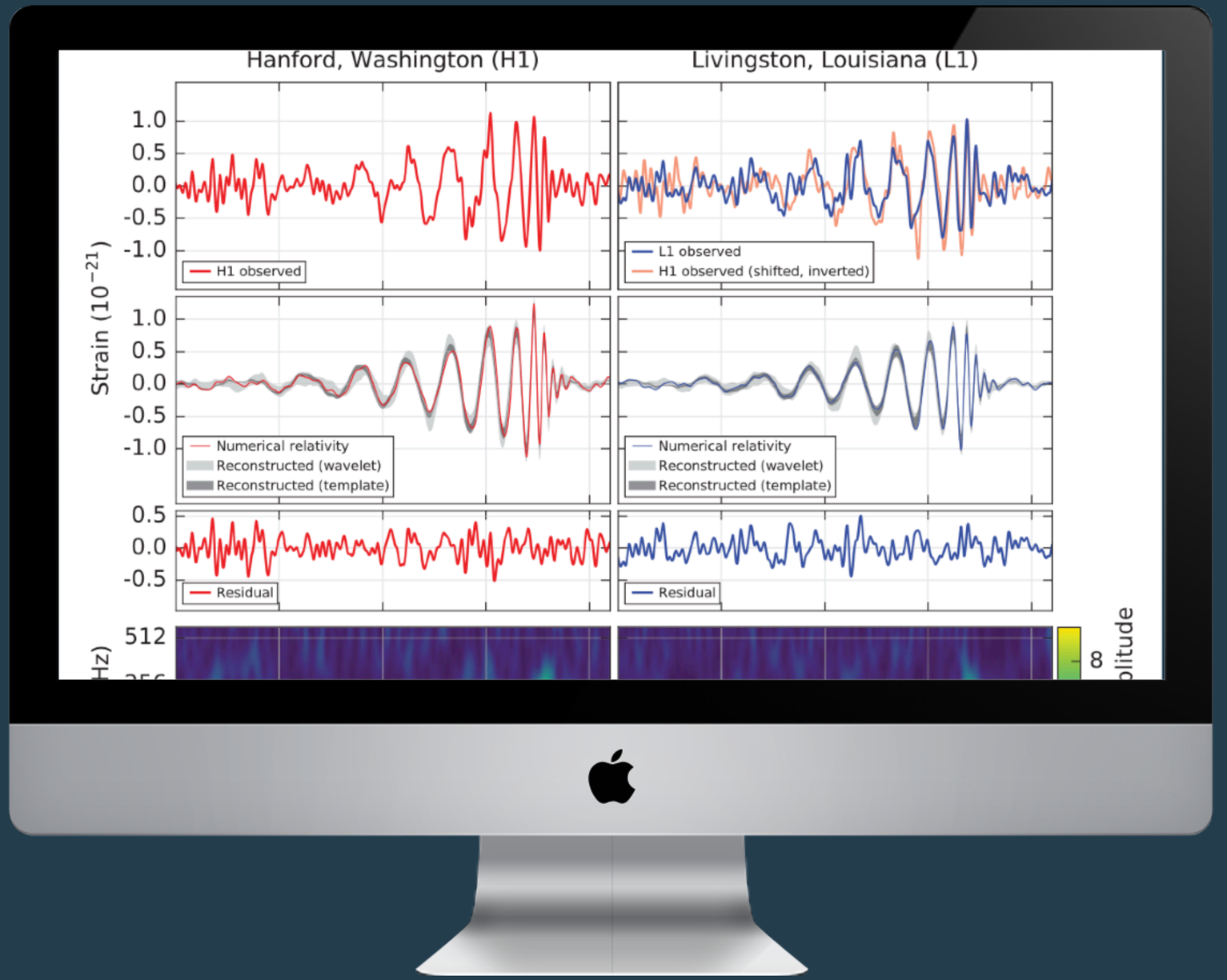

Abbott, Benjamin P., et al. PRL 116.6 (2016): 061102.

Computing in physics is:

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Implementing and assessing computational modeling in introductory mechanics

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```
1  from __future__ import division
2  from visual import *
3
4  craft = sphere(pos = vector(10e7,0,0), color = color.white, radius = 1e6)
5  Earth = sphere(pos = vector(0,0,0), color = color.blue, radius = 6.3e6)
6  trail = curve(color = craft.color)
7
8  G = 6.67e-11
9  mcraft = 1500
10 mEarth = 5.97e24                                    Initial Conditions
11
12 vcraft = vector(0,2400,0)
13 pcraft = mcraft*vcraft
14
15 t = 0
16 deltat = 60
17 tf = 365*24*60*60
18
19 while t < tf:
20
21     r = craft.pos-Earth.pos
22     rhat = r/mag(r)                                 Force Calculation
23     Fgrav = -G*mEarth*mcraft/mag(r)**2*rhat
24
25     pcraft = pcraft+Fgrav*deltat                    Newton's Second Law
26     craft.pos = craft.pos + pcraft/mcraft*deltat    Position Update
27
28     trail.append(pos = craft.pos)
29     t = t + deltat
30
31 print 'Craft final position: ', craft.pos, 'meters.'
```