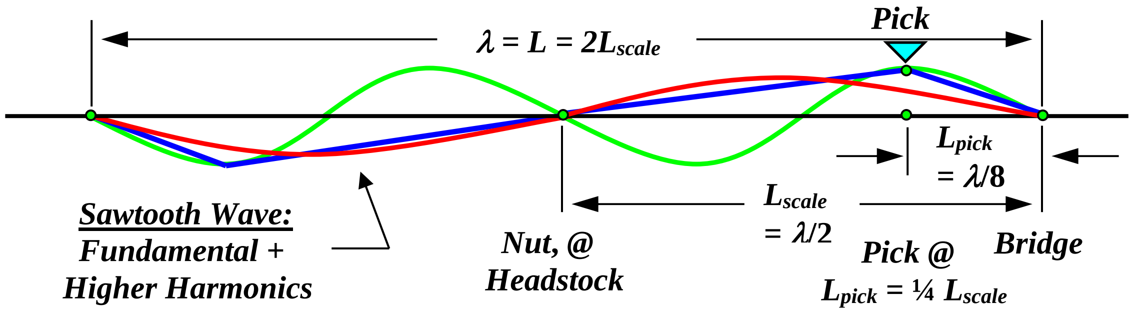
To connect these results with the physical world, we return to the example of the guitar. As shown (again) in the figure below, the scale length, L_{scale} of the guitar corresponds to half the wavelength, λ of the fundamental, for open-string notes played on the guitar, i.e. $L_{scale} = ½\,\lambda$. For a pick position distance, L_{pick} (referenced from the bridge of the guitar), this is a fractional distance, $\beta_{pick} \equiv L_{pick} / L_{scale} = 2L_{pick} / \lambda$.

Vibration of the Fundamental and 2^nd^ Harmonic of a Guitar String



In the following table, we summarize the $\beta_{pick} \equiv L_{pick} / L_{scale}$ locations for the nodes and anti-nodes associated with the first 10 harmonics. Playing at the anti-node locations will result in enhancing that particular harmonic, while playing at the nodal-locations will cause that harmonic to be absent. Physically, values of $\beta_{pick} \equiv L_{pick} / L_{scale} < ½$ correspond to playing between the bridge and the bottom end of the neck, at the body of the guitar. Smaller values of $\beta_{pick} \equiv L_{pick} / L_{scale}$ are closer to the bridge end of the guitar.

Harmonic # ***n***	$\beta_{pick} \equiv L_{pick} / L_{scale}$ ***for Node***	$\beta_{pick} \equiv L_{pick} / L_{scale}$ ***for Anti-Node***
1 (Fundamental)	–	$^1/_2$
2	$^1/_2$	$^1/_4$, $^3/_4$
3	$^1/_3$, $^2/_3$	$^1/_6$, $^3/_6={}^1/_2$, $^5/_6$
4	$^1/_4$, $^2/_4={}^1/_2$, $^3/_4$	$^1/_8$, $^3/_8$, $^5/_8$, $^7/_8$
5	$^1/_5$, $^2/_5$, $^3/_5$, $^4/_5$	$^1/_{10}$, $^3/_{10}$, $^5/_{10}={}^1/_2$, $^7/_{10}$, $^9/_{10}$
6	$^1/_6$, $^2/_6={}^1/_3$, $^3/_6={}^1/_2$, $^4/_6={}^2/_3$, $^5/_6$	$^1/_{12}$, $^3/_{12}={}^1/_4$, $^5/_{12}$, $^7/_{12}$ ...
7	$^1/_7$, $^2/_7$, $^3/_7$, $^4/_7$, $^5/_7$, $^6/_7$	$^1/_{14}$, $^3/_{14}$, $^5/_{14}$, $^7/_{14}={}^1/_2$, $^9/_{14}$ ...
8	$^1/_8$, $^2/_8={}^1/_4$, $^3/_8$, $^4/_8={}^1/_2$, $^5/_8$, ...	$^1/_{16}$, $^3/_{16}$, $^5/_{16}$, $^7/_{16}$, $^9/_{16}$, $^{11}/_{16}$, ..
9	$^1/_9$, $^2/_9$, $^3/_9={}^1/_3$, $^4/_9$, $^5/_9$, ...	$^1/_{18}$, $^3/_{18}={}^1/_6$, $^5/_{18}$, $^7/_{18}$, ...
10	$^1/_{10}$, $^2/_{10}={}^1/_5$, $^3/_{10}$, $^4/_{10}$, $^5/_{10}$, ...	$^1/_{20}$, $^3/_{20}$, $^5/_{20}={}^1/_4$, $^7/_{20}$, ...

Thus, from the above table, we can see that for playing on _nodes_ associated with the n^{th} harmonic, that $\beta_{pick} \equiv L_{pick} / L_{scale} = m / n$, where n is the harmonic #, and m is an integer such that m = 1, 2, 3, ... < n. For playing on _anti-nodes_ associated with the n^{th} harmonic, we see that $\beta_{pick} \equiv L_{pick} / L_{scale} = (2m - 1) / 2n$, where again, m is an integer such that m = 1, 2, 3, ... < n.