Creep Noise

- The relevant formula is given below including some parameters. The parameters are all upper limits so that the final number given is an upper limit.
- Both the creep glitch size and glitch rate were set from an experiment where C85 steel was loaded to a few percent below its breaking point. Since LIGO is well below this limit (although the exact steel type is unknown), these numbers are probably much too large.
- In any case, creep does not seem to be an issue, although the slope is $1/f^3$

\[
x(f) = \Theta \left( \frac{f_0}{f} \right)^2 q_s \frac{\lambda}{2\pi f}
\]

$\Theta = \text{vertical to horizontal coupling}[10^{-3}]$

$f_0 = \text{vertical resonance}[13 \text{ Hz}]$

$q_s = \text{creep glitch size}[10^{-15} \text{ m}]$

$\lambda = \text{creep glitch rate}[2 \times 10^5 \text{ s}^{-1}]$

$x(100\text{Hz}) = 1 \times 10^{-20} \text{ m} / \sqrt{\text{Hz}}$