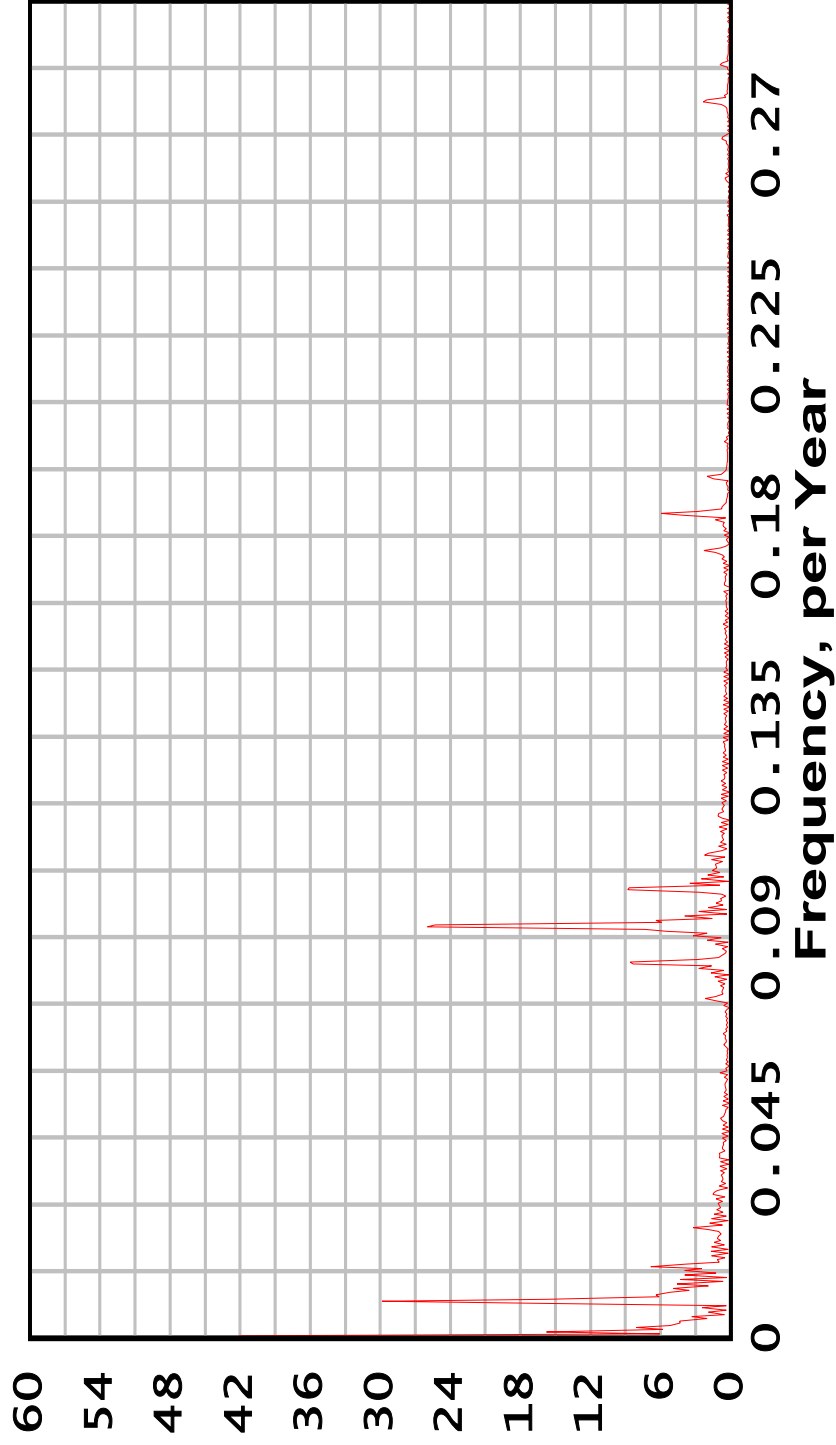
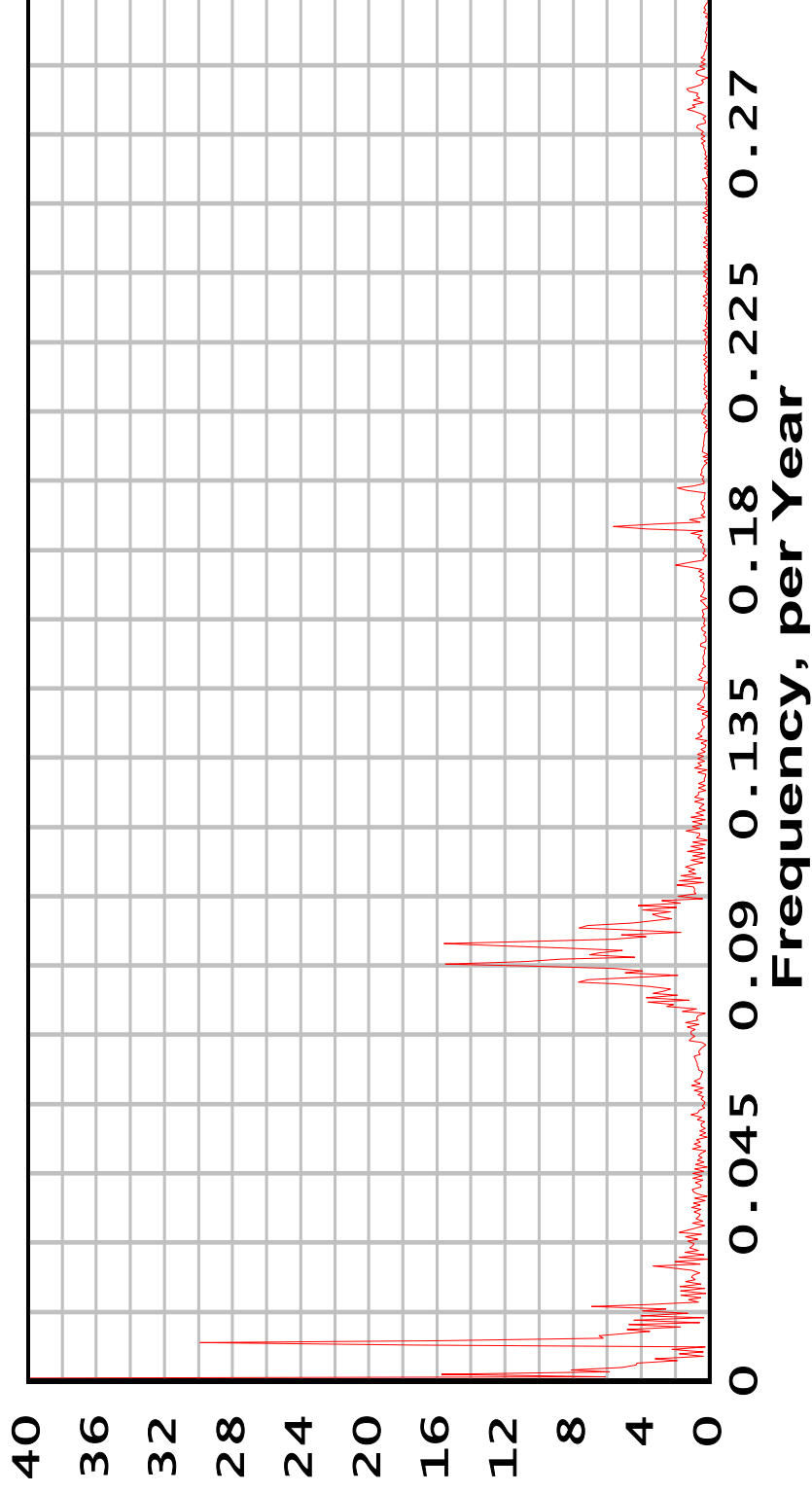


$$SSN=100*ABS(COS[6.2832/4+6.2832*(t-1941)/(2*11.862)]+COS[6.2832*(t-1941)/19.859])$$

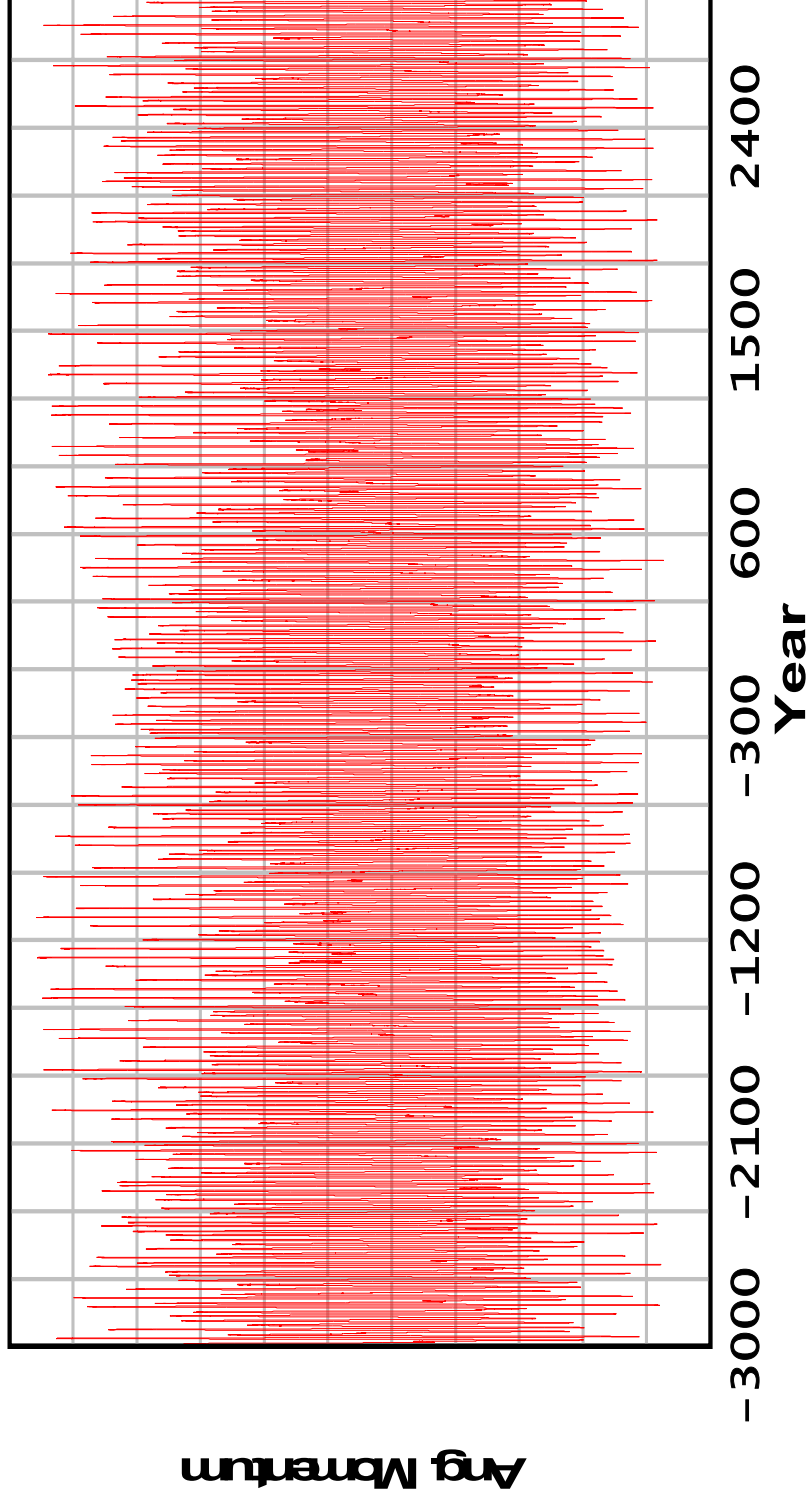


The main peak near 0.09 is a period of 10.78 yr with side peaks at 9.94 and 11.91 yr. The low frequency peak is at 120.47 yr.

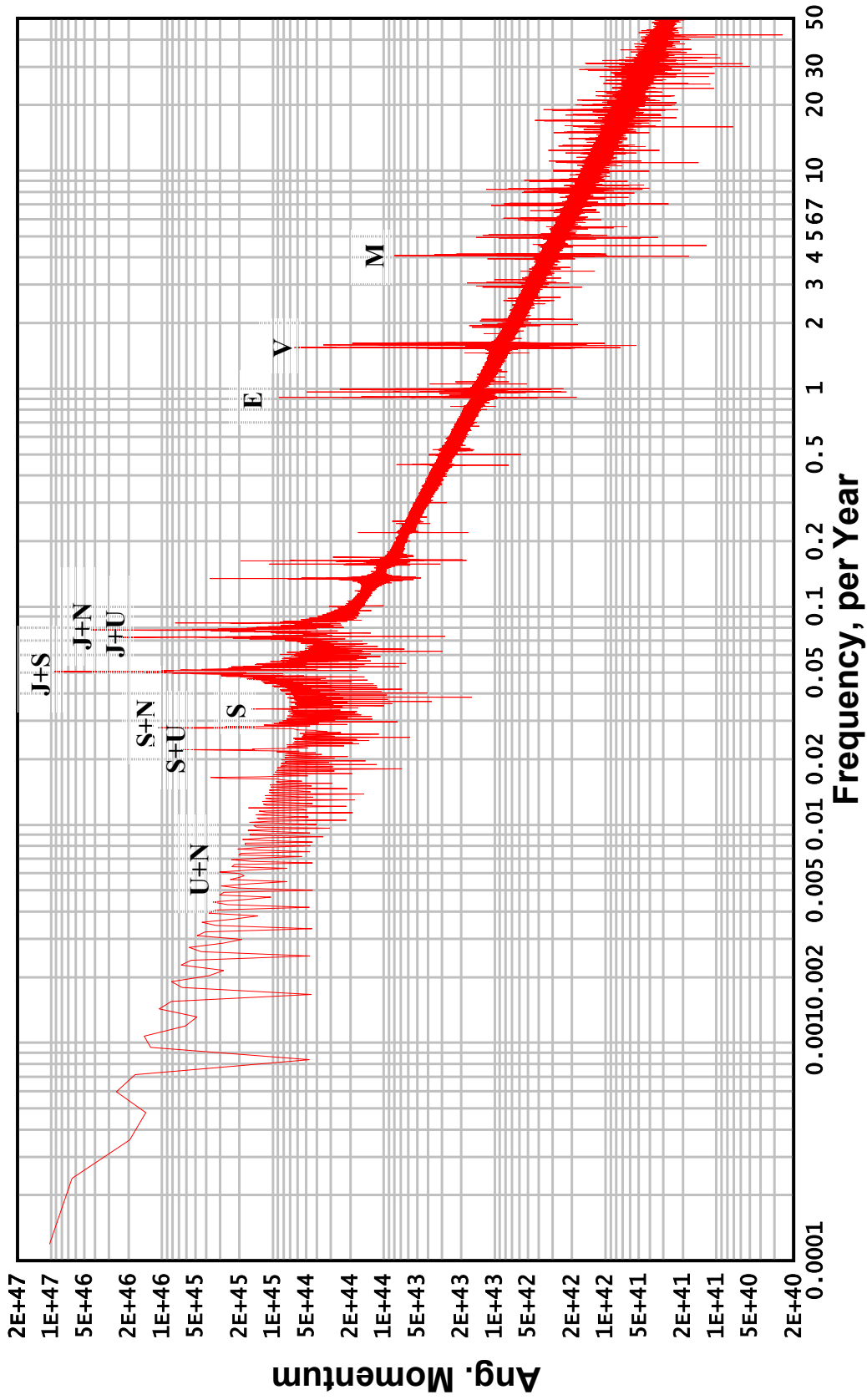


Introducing the [unphysical] phase shift every 260 or 250 years [depending...] has the effect of erasing the central peak [as the cycles change phase every ~255 years]. We are left with the side peaks only at 10.56 yr and 11.07 yr. The peak for the envelope is still at 120.47 yr. The connection with the planets now seems gone for the expediency of fitting NASA better.

Since it is claimed that the Sun's angular momentum with respect to the solar system barycenter is controlling the solar cycle, it is of interest to calculate the FFT for the angular momentum SAM. Here is SAM for the 6000 years from 3000 BC to 3000 AD:

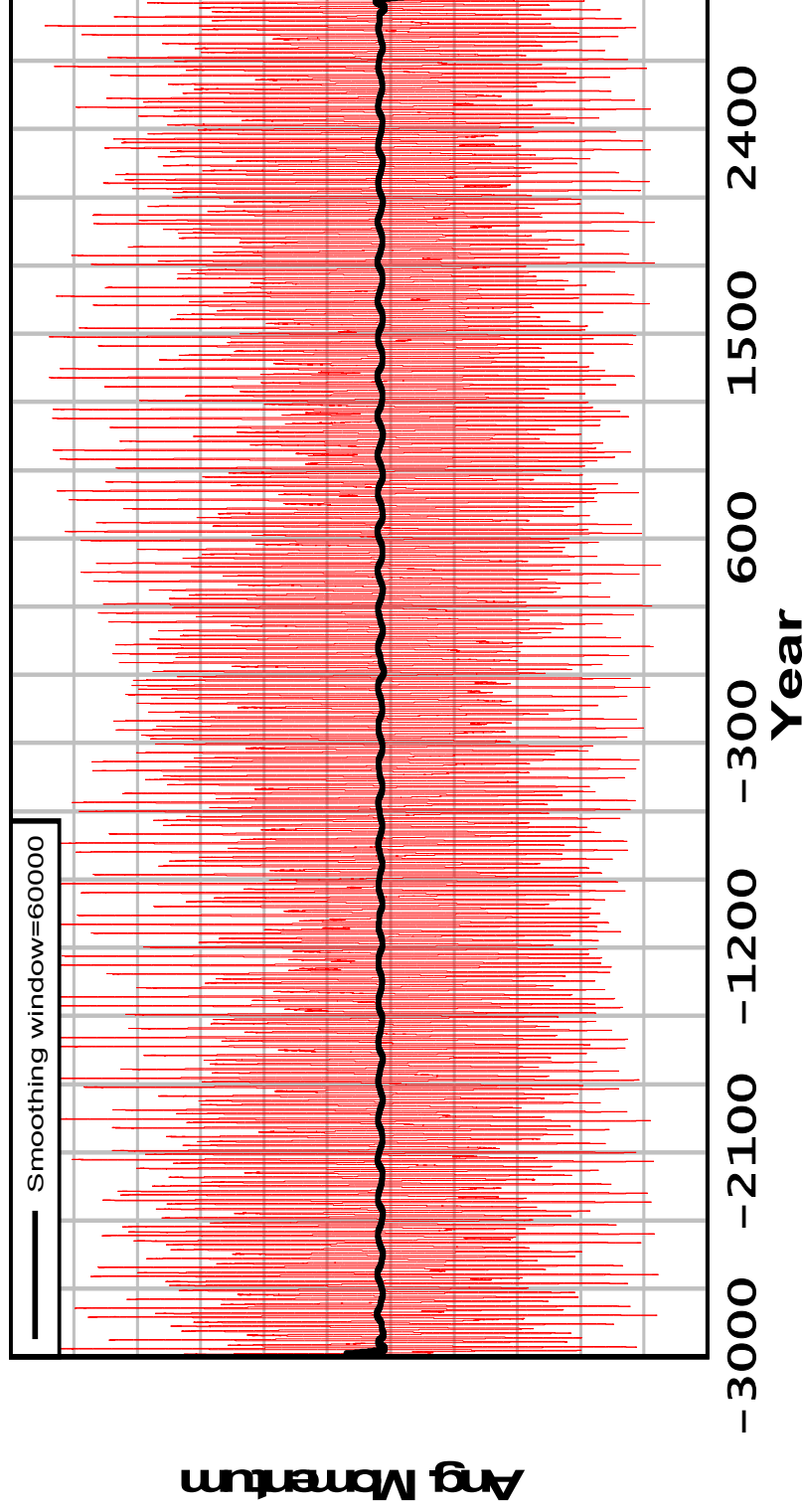


There are numerous cycles visible in the plot, as we would expect from something controlled by the planetary orbital cycles. Calculating FFT gives:



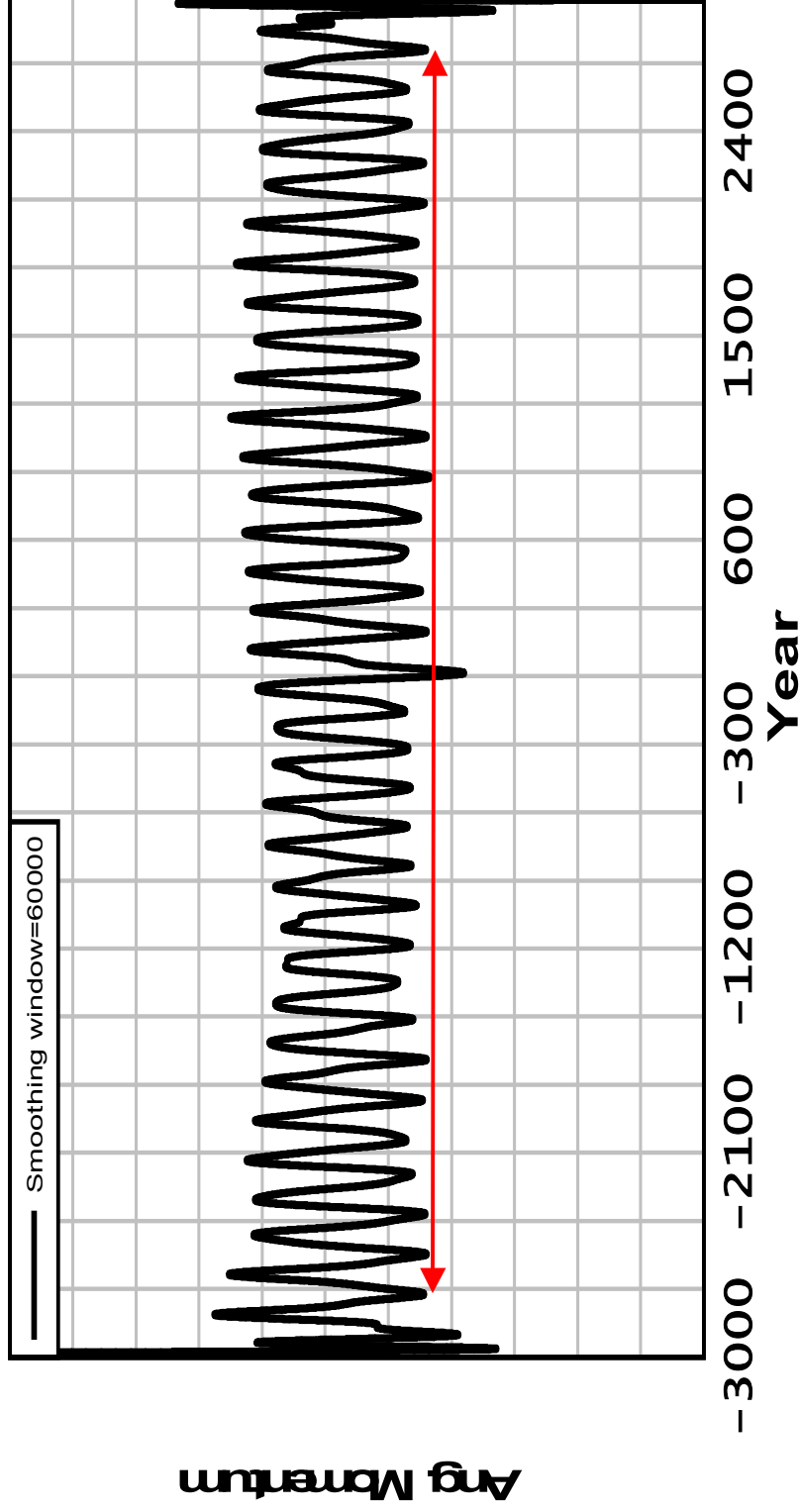
The most prominent peak is at Jupiter+Saturn conjunctions at 19.8835 year intervals [freq. 0.05023/yr]. I have marked several others. Some are split because of elliptical orbits. Note that J+S has 30 times as much power as U+N, which is barely above the background.

Calculating a 60-year running mean of the SAM largely filters out the contributions from Jupiter and Saturn, giving the black curve:



The 60-year average variation is much, much smaller than the full variation of SAM, in keeping with the small magnitude of the U+N peak in the FFT versus the J+S peak.

Enlarging the scale of the 60-year smooth SAM makes it easier to see:



The arrow is 5480.8 years long and spans 32 cycles, for an average of 171.28 years per cycle as we would expect from the 171.79 years between Uranus+Neptune conjunctions. The difference between 171.28 and 171.79 is probably not significant. The dip at year 0 is artificial, caused by the lack of a year 0. This has been taken into account in the calculation of the span.