1. Estimate of f0:

(0.47373 – 0.107666) / 3 = 0.122 kHz

Or in Hz, 122 Hz. A little high, but within reason.

A red and yellow background with white text

Description automatically generated

**2.** dj duration: 60.9959 - 14.5228 = 46.4731ms

Z duration : 669.502 – 537.344 = 132.158ms

M start point: 406.639ms

Post-onset time: 406.639 – 14.5228 = 392.1162ms

A screen shot of a computer generated image

Description automatically generated

**3.** Period Estimate:

(172.822 – 94.3983) / 9 = 8.71374ms

Frequency = 1/period = 0.11476

Convert to Hertz; multiply by 1000

Resulting estimate: f0 = 114.76 Hz

This would appear to be right on target for an estimate!

A screenshot of a computer

Description automatically generated

**4.** We can think of a few ways that the STFT might relate to our own auditory processing. One key difference is that the cochlea integrates sound continuously, compared to the discrete method we use with the STFT. However, that’s only true to a certain extent. There are physical limitations to how quickly the information can be encoded by the cochlea, primarily due to the limited firing rate of auditory neurons (a limitation that becomes further exacerbated as the signal moves up the auditory system). This isn’t as limiting as it seems, though, because our system uses other information (e.g., place encoding from tonotopic organization) to gain a richer signal than sampling rate alone would suggest. The cochlea does share the tradeoff between time fidelity and frequency fidelity with the STFT method we used here. Higher level systems can be trained and attention resources used to further refine this fidelity perceptually, but that tradeoff always exists.