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COMMENTARY

Response to Hansen and Lieberman

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It is indeed interesting that the non-classical behavior of the pendulum persists after the human subject has departed. We did observe this, but generally not for as long as reported by Hansen and Lieberman (H&L).

We too performed Fast Fourier Transform (FFT) analysis of some of our data recorded before, during, and after the subject's head was under the dome. See Figure 1, which shows persistent (but greatly diminished) erratic behavior even after the human subject's head was removed from the dome. However, it seemed to us that wishful thinking would be required to conclude that the same frequencies were present both after and during the head's presence. FFT analysis of any chaotic oscillation is bound to show a variety of frequency peaks.

Hansen and Lieberman's suggestion that "the bio-field [causes] the atomic/molecular structure of the pendulum to shift to a higher-energy quantum state, and this state would have to possess both spiral vortex and frequency aspects that could continue to exert their effects entirely on their own, after the subject has departed" is breathtaking, considering the difficulty so far encountered in demonstrating quantum effects in macroscopic objects (see for example O'Connell et al. 2010).

We think a more likely explanation is persistent non-uniform temperature distribution.

The question of whether the effects are induced by convection might best be settled by the following experiment. Replace the human head with a non-living object of the same size, shape, texture, humidity, and temperature. If the perturbation of the pendulum is still observed, then convection currents are likely the mechanism. If not, then we really do have a bio-field and a way to detect and measure it.

We currently do not have the time or wherewithal to perform this experiment, but we encourage others to do so.

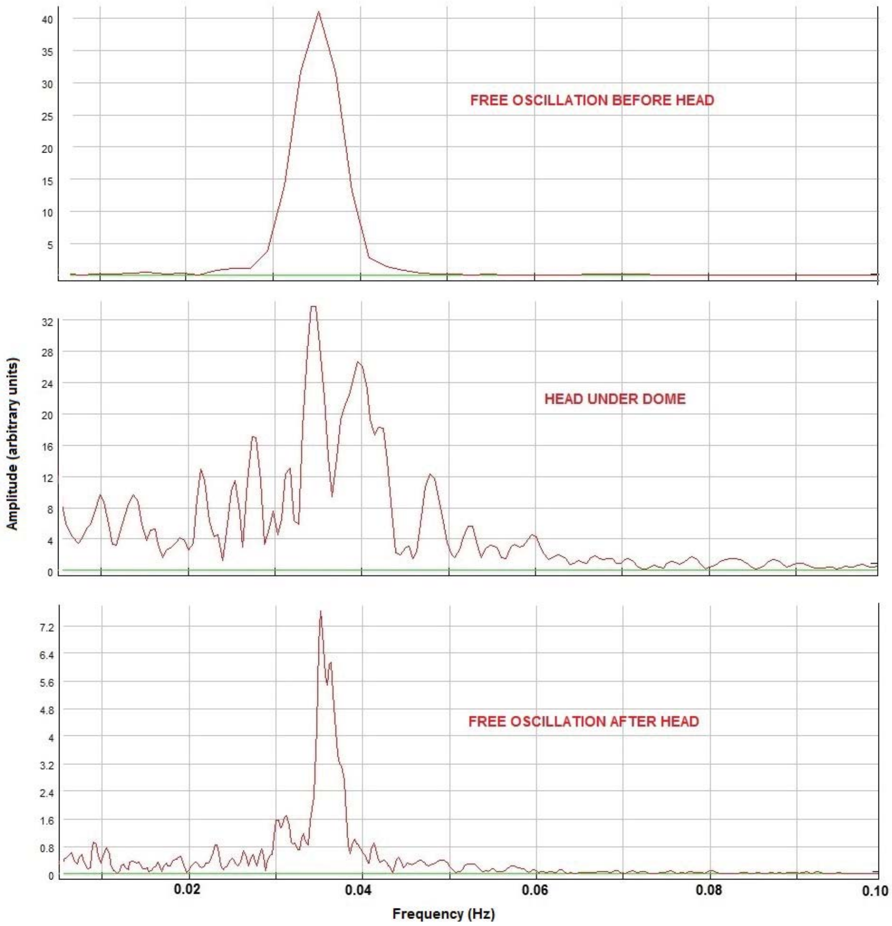

Figure 1. Fast fourier transform (FFT) analysis of a typical experimental run, showing the frequencies present before, during, and after the subject's head was under the pendulum dome.

Reference Cited

O'Connell, A. D., Hofheinz, M., Ansmann, M., Bialczak, R. C., Lenander, M., Lucero, E., Neeley, M., Sank, D., Wang, H., Weides, M., Wenner, J., Martinis, J. M., & Cleland, A. N. (2010). Quantum ground state and single-phonon control of a mechanical resonator. *Nature, 464*, 697–703.