Review of: "Rhythmic Oscillations and Resonant Information Transfer in Biological Macromolecules"

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Potential competing interests: No potential competing interests to declare.

Honestly speaking, it was not easy for me to understand the deep physics in this review. Comments below are just my thought from the viewpoint of a researcher who is not a specialist of the field discussed in this review.

In my understanding, there are numerous systematic or noisy (random) motions in biological systems, such as muscle motions, heart beat, molecular motor, vesicle transport, and thermal (Brownian) motion. They (except the last one) are not a harmonic oscillation with energy conservation, but dissipative structures. They have their own time-scales, that are different depending on the spatial scales. A larger scale motion may be produced sometimes from the smaller scale agitations , e.g., via the ratchet effect or via the synchronization. The hierarchal structure inherent in these dynamics can be studied and discussed through the experiments and measurements. If my understanding is correct, the harmonic oscillation proposed in this review would have much higherfrequency and smaller amplitude. This intrinsic (by this review) oscillation exists in the above noisy environments with much longer time scales. Most of biological dynamics are explained in terms of the longer scale dynamics. In this situation, for me, it is not easy to speculate the mechanism through which the elementary oscillation (by this review) provides the effective actions on the biological functions. This question may be due to the lack of my knowledge and understanding for fundamental physics discussed in this review. However, not a few scientists may be in the same situation. Thus, the discussions or a possible speculation on this point may be useful for the broad readability of this review. Proposition of a possible experiment or thought experiments for verification of this hypothesis would be helpful for further progress.