

Preliminary comments:

---In physics, metastable states are the ones that do not minimize the system energy. From the point of view of dynamical systems, these states can even be stable. This matches what is illustrated in figure 2(a). However, as we know, this definition is insufficient for studying the systems that we are aiming for. That's why figure 2(a) can be misleading in the text unless we use it to make the point that a new approach is necessary. It would be an example of what metastability can not be for our purposes. In this case, we should move this figure to a different position in the text.

---In physics, metastability is a property of a state. This is not our case. Therefore, we may not use the expression "metastable states" if we are referring to an entire state-space domain (neighborhood). Specially, for the cases which the overall solution is stable such as the chaotic attractors containing the ghosts. One could loosely refer to "states" more like an epoch of the dynamics, but this could be misleading.

---Our current definition in the text: "we propose to define metastable states as regions of state space that are visited for a time that is much longer than the transition times to reach or leave them." As we discussed, it captures a good idea of metastability. But, perhaps, we could write this in a more fundamental way. If we are referring to regions of the state space, we should talk about the features of these regions in the definition. The concepts of "transitions" and "transition times" seem too much to appear in the definition and they could come as a consequence of more fundamental features.

For instance, looking only at the state space regions in question, we can say that they are "sticky" (for lack of a better word at the moment). With this, we could write a definition only in terms of the "sticky" property.

As an example:

"We feature metastable behavior as trajectories visiting sticky state-space domains. Trajectories temporarily adhere to these domains due to invariant sets with at least one attracting direction in their state- or parameter-space vicinity."

The parameter-space vicinity would account for the ghosts occurring close to bifurcations.

---In the introduction, it could be interesting to build up the concept of stability to illustrate that the various examples in the brain (Refs.) do not fit to it. It would justify the necessity of a concept called "metastability". We can better discuss this, I have some references for it.

---The figures are nicely illustrating the different phenomena. For the moment, no comments on that. Of course, we will discuss the text in more detail in the next interactions.

Good job so far!

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