

# Review of: "Planetary relationship as a key signature from the dark sector"

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**Potential competing interests:** No potential competing interests to declare.

In this paper, the authors suggest a relationship among the 11-year Solar cycle, planetary synodic periods and focused Dark Matter streams.

Although I usually support unconventional studies looking for alternative explanations of physical phenomena, I think that in this case there is very little in this paper to convince the reader of the authors' statements. As presented the authors' ideas seem too far-fetched and cobbled together to be of any value to the current research on DM. Perhaps, I would change my opinion if the paper is heavily rewritten and the missing calculations were carried out:

The authors say in the Introduction: "Even the Moon can focus incident invisible streams toward the Earth with velocities up to about 400 km/s, thus covering a large part of the velocity phase space of the dark sector components". A review of these calculations is necessary for readers who are not familiar with these results.

Also in the Introduction: "Then, the increased dark flux can surpass threshold effects, mimicking a not extant planetary force". Okay, and how does this force arise ? Is this force responsible for the sunspot cycle? How ?. Too many unanswered questions. All these should be clarified with calculations and a clear line of reasoning regarding the physical effects of the DM-focused streams.

In section 2: " We recall that the solar cycle coincides with the planetary synod of Jupiter-Earth-Venus. However, so far, no viable mechanism has been presented within known physics that could explain it. For comparison, the suggested planetary gravitational focusing of the generic stream(s) from the dark sector has been inspiring." Therefore, the authors believe that DM streams could explain the coincidence between synodic periods and the solar cycle but where is the mechanism ? I do not find in the paper any mathematical/physical line of reasoning that could allow such an idea.

Just before "normal biomedical reactions (i.e., not malignant) associated with conception rates also show diverse planetary relationships, including the quasi-ubiquitous 11-year solar rhythm". This sounds too much like astrology, so you cannot include such a comment in a physics paper without far more explanations.

It seems that this has been published in a refereed journal but this does not make it more acceptable for anybody that has not heard about this before. Many wrong ideas make their way through the imperfect filter of refereed journals.

I don't understand the conclusions driven by Figure 1. Although there are many peaks coincidences there are also red points off the peaks of the solar cycle.

In any case, even if it is statistically significant it still does not mean anything without a convincing physical reason and a detailed mechanism.

The conclusions that the authors derive for the possible DM candidates (AQNs, dark photons, etc) are not to be made at this stage of the research without the backup of a well-designed physical model for the origin of the phenomena they claim to be related to DM-focused streams.

Therefore, I think that in its present form, this work is too sketchy to be a valuable addition to the literature about DM and the authors should consider first to fill the holes in their reasonings with detailed calculations and the unravelling of the physical mechanisms.