

May 10, 2021.

We sent the message reproduced below to Sabine Hossenfelder. On Wikipedia:

[https://en.wikipedia.org/wiki/Sabine\\_Hossenfelder](https://en.wikipedia.org/wiki/Sabine_Hossenfelder)

His email address at the Institute for Advanced Physics in Frankfurt::

[hossi@fias.uni-frankfurt.de](mailto:hossi@fias.uni-frankfurt.de)

She does not answer. Nor does she respond to comments posted in the discussion area of her latest video:

[https://www.youtube.com/watch?v=4\\_qJptwikRc](https://www.youtube.com/watch?v=4_qJptwikRc)

In a week she has reached almost 300.000 views and 3200 comments (..). In this video she rehashes the story of dark matter and modified Newtonian theory, concluding that the solution is a mix of both.

In doing so, she completely ignores the Janus model!

In 2002 Damour and Kogan published a long paper evoking a first bimetric model.

<http://www.jp-petit.org/papers/cosmo/2002-Damour-Kogan-biggravity.pdf>

But it gives nothing, but a pseudo mathematical jumble without consistency. For Damour and Kogan, the universe would be made of "two branes floating in a higher dimensional space", whose points would be connected by some kind of elastic strings. Moreover they invoke gravitons endowed with masses (whereas their existence is not established). The paper mentions that Kogan has "demonstrated" the existence of a "gap" in the mass spectrum of these gravitons, separating "light gravitons" from "heavy gravitons". With such an approach the model obviously gets bogged down and sinks into the usual pataphysics.

The second bimetric approach (these are the only two except ours) is that of Sabine Hossenfelder. She completely missed a great discovery by making the wrong choices of signs in her Lagrangian. This leads to a non-identity between "gravitational mass" (the way particles contribute to the gravitational field) and "inertial mass" (the way particles react to a gravitational field). This equivalence principle is the basis of Einstein's approach and we have also chosen to maintain it, which gives the Janus equations.

Of course, the first members of these field equations, those of Damour, those of Sabine Hossenfelder and ours are identical. But this is normal, if we want the first equation in the vicinity of the solar system to be identified with the Einstein equation.

Sabine missed everything, for lack of a good physical intuition.

But, noticing the similarity between our equations and hers, she immediately cried plagiarism. The similarity was difficult to establish. We said to ourselves "why not? " and immediately proposed to establish this relationship, through a paper published in a good journal, which we could then have co-authored. An article that would then recognize his possible anteriority.

I added "then, we could collaborate. You for the mathematical aspects and we for the links with observation".

The answer immediately hit home like a whip:

*- I don't want to collaborate with you.*

But this article never came.

I then asked Nathalie Debergh, a year ago, to try to contact her. To this she replied:

*- I don't want to deal with these plagiarists anymore*

I then plunged into the analysis of her 2008 paper with the help of a mathematician friend, and I was finally able to see clearly. By making bad choices of signs, Sabine was heading towards a dead end, violating the principle of equivalence (while respecting this principle is one of the main threads of the Janus model). Thus her model could no longer give anything coherent.

<http://www.jp-petit.org/papers/cosmo/2008-Hossenfelder.pdf>

The only thing she was considering was the negative gravitational lensing effect, presented by her as the "smoking gun", an effect we already described in 1995.

<http://www.jp-petit.org/papers/cosmo/1995-AstrophysSpaceSci.pdf>

It became impossible to deduce the Janus equations from his own and his accusation of plagiarism was unfounded.

But Sabine Hossenfelder began to join the very closed club of "great popularizers". The door of the journal Scientific American has been opened to her. If she even pretended to take a step in our direction, even by mentioning our model, which she could not demolish, all the doors would close in front of them. The doors of Scientific American and Nature, the editors, the journals. And even her community of theoretical physicists would turn away from her.

Here is the message we sent her on April 29, 2021.

Dear Sabine,

You told us in 2017 that the equations of our Janus model were in fact yours and you accused us of plagiarism. We then proposed you to show that our work was derived from yours, six years earlier, through an article that we could have co-authored, thus recognizing your anteriority, if the proof could be established. Faced with your lack of reaction, after two years of waiting, our Belgian mathematician colleague Nathalie Debergh tried to establish a dialogue with you. But you immediately cut it short by saying "that you do not want to have any more relations with plagiarists".

We could not, in the face of such a serious accusation, let you continue to peddle this within the scientific community. So we did the work you should have done, before making such a serious statement. That is to say that we took the time to analyze your work carefully, as you should have done with ours, instead of being satisfied with a superficial reading, which led to a total misunderstanding of our writings.

It took a lot of time and effort to understand where the differences were. In fact, after having built your system of equations from a Lagrangian you tried to fit the standard model of cosmology. In doing so, you have completely missed the benefit of a bimetric model, which allows first of all to explain the large scale structure of the universe, which is incomplete, and the confinement of galaxies. Instead you have gone and lost yourself in an unsuccessful attempt to model the cosmological constant. Your desire to fit in with a cosmology that you consider as "standard" leads you to a bad choice of signs, which results in a violation of the equivalence principle.

The only thing our two models have in common is that they are formulated from two coupled field equations. But there the comparison ends. Thus you have no phenomenon that can be validly confronted with observations, except this negative gravitational lensing effect that we had already described in 1995 in an article in *Astrophysics and Space Science*.

In your book "Lost in Maths" you urge theorists to stick with reality, which we have done. You did not.

<https://www.amazon.com/Lost-Math-Beauty-Physics-Astray/dp/0465094252>

We summarized the whole process in this long article that *Physical Review D* did not want to submit to a referee, after four months of waiting. It was also blocked in the gr-qc section of arXiv, where we have an account, and which refuses to put online four of our papers published in *Astrophysics and Space Science* and *Modern Physics Letters A*, which reflects an unequivocal censorship. By resubmitting it to other journals, we have positioned it on the Researchgate platform.

How is it that you, who are so quick to criticize everything that is published or said, never mention your 2008 paper and our work in your blog *Backreaction*, where you address all sorts of issues?

Sincerely yours

The Janus team

Jean-Pierre Petit, Gilles d'Agostini, Nathalie Debergh

**The article in question:**

<http://www.jp-petit.org/papers/cosmo/2021-Janus-Cosmological-Model.pdf>