Dear Editor,

Here you will find along with the corrected manuscript, a detailed response to each of the questions and suggestions proposed by you and the reviewers. I hope that you find this corrected version suited for publication.

Best regards

Mariano Andrés Paulin

EDITOR:

- Please check the affiliations of all authors, also the institutes named in the abstract

Affiliations were checked and the name of JCNS was corrected in the abstract.

- Please introduce HiCANS / JULIC if you use them in the abstract

The meanings of HiCANS and JULIC were introduced in the abstract.

- In the introduction, I think it would be good to paint a more general picture of HiCANS developments and not restrict it to LLB

A paragraph was added to the introduction highlighting the global nature of HiCANS developments.

- In 2.1: wouldn't a source with three Maxwellian components be better called "*tri*-spectral"?

The under-moderated component is a spurious component and relatively low with respect to the thermal and cold ones, that's why the term "bi-spectral" is used.

- I feel that sections 2 and 3 would benefit from a clear reasoning that culminates in the conclusion "that it should be possible to readily measure reflectivities below 1e-5". This conclusion is currently not clear to me.

This question is related to the next one, so I will answer them together.

- The accessibility of low reflectivity values surely depend at least as much on the reduction of background as they depend on the increase of flux. It would be nice if the authors could include some discussion of this aspect, especially in the light of increasing the power on target by 5 orders of magnitude.

Two aspects need to be taken into account. In the first place, the scaled flux to HBS should be high enough to ensure good statistics for low reflectivity values in an achievable measuring time. As McStas simulations showed that reflectivities below $1e^{-4}$ should be measurable at HERMES installed at JNP, increasing the flux by 4 orders of magnitude at HBS should easily allow us to reach 5 orders of magnitude in reflectivity. On the other hand, the background should also be low enough to allow this reflectivity range. This last point is one of the most complex issues and we are currently doing different tests at JNP to have a better insight on this. These two aspects were incorporated into the manuscript.

REVIEWER 1:

This paper describes interesting tests performed on a HICANS source. This paper should be accepted for publication after taking into account the few suggestions listed below.

***Table 1 is presented in reverse order when compared to the text describing it.**

The table was reorganized as demanded by the reviewer.

***Guide system section: "Nevertheless, as HERMES was originally built with m = 2 guides along the instrument, the increase in flux wouldn't necessarily benefit the instrument's performance."**

This sentence becomes clear only later in the text and a better formulation is possible, along the lines of "using m = 2 primary guides would only make sense if all of the secondary guides would be upgraded" (a solution probably rejected on the basis of cost).

The section was reorganized to clarify this matter.

***The detector type and performance are not mentioned anywhere.**

Details on the detector were added to the manuscript.

The authors should provide a value for the achievable/used wavelength resolution. (first sentence of section 2.4) and not only rely on simulations for different pulse lengths to illustrate that the first fringe of the 20nm layer is visible. The actual usability of the instrument will also be determined by the resolution.

A plot with the wavelength resolution for the different pulse lengths was added to the manuscript.

REVIEWER 2:

In their manuscript „The HERMES reflectometer at the JULIC neutron platform" the authors describe simulations and first measurements of the HERMES reflectometry to the JULIC neutron technology platform. Evaluating the performance of neutron instrumentation is a key task and very important to convincingly demonstrate the capabilities and potential of HICANS. In this manuscript a combination of ray tracing simulations and first measurements are shown. The data is very preliminary as several upgrades of the JULIC platform are planned but not finished.

Overall this is a very interesting manuscript but the authors should consider the following points:

Table 1: Having the first scenario in the second column is confusing.

The table was reorganized as demanded by the reviewer.

The English needs some improvements. Some paragraphs are very short. It seems that the manuscript was written in a slight rush. Some more details and more thorough explanations would are required.

The spelling and redaction were revisited. We hope that now the manuscript is clearer.

The list of references is very short. Most are self citations or technical description of equipment. The manuscript would benefit from. A wider overview of the field.

References were added as suggested by the reviewer.

M=2 is not really a high m value.

In the manuscript, we refer to m=2 as higher than the m=1 used in the horizontal walls of the neutron guide. We never meant to suggest that m= 2 is a high m-value as we understand that by today's standards, it is not. The instrument may benefit from higher m-value mirrors but that would entail a major modification of the instrument.

Table 2: It is surprising that focusing does not increase the flux. There is a question what the authors want to say here and what is compared. Focusing should increase the flux but also the divergence. Maybe the authors could comment more about this.

The flux for the semi-elliptical guide is higher than for the other evaluated configurations. Nevertheless, the slight change (< 15%) does not justify the increase in complexity and price.

I do not understand the statement made about the horizontal mirrors. For a reflectometry good collimating in this direction is required. What mirrors are considered? What geometry?

HERMES is a horizontal-sample or vertical-scattering-plane reflectometer though the vertical collimation is the one that affects resolution.

Second figure 8 should be figure 10.

The figure number was corrected in the manuscript.