

## Invitation of Prof. Slavomir WYCECH

One month in 2022 - 05/07 - 05/08

*ESNT Project* :  $\bar{p}$ -N and  $\bar{p}$ -Nucleus Interactions

Organizers : Jaume Carbonell (IJCLab, Orsay)

Participants : Benoit Loiseau (LPNHE)

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## 1 Motivations

The project follows the Workshop “Nuclear physics with antiprotons: a theory endeavor” organized at ESNT during one week in November 2021 and in which S. Wycech participated.

Antiproton physics, which remained dormant after the closure of LEAR in 1997, has been revived following the approval by CERN of the PUMA project [1]. The scientific project that we wish to develop during Prof. Wycech’s visit includes several aspects of this physics:

1. An update of the Paris potential developed in the 80’s by B. Loiseau and collaborators [2] to describe the  $N\bar{N}$  interaction.

It includes i) a regularisation of the 2009 version [3] which presented discontinuities of the first derivative and ii) a readjustment of its parameters to incorporate some some results from the  $J/\Psi$  decay of antiprotonic atoms [4].

2. A critical evaluation of the  $\bar{p}A$  potentials used, in view of the exact calculations we have recently published for light nuclei [5, 6].
3. How to extract physical conclusions from the measurements currently being made at PUMA.

It is out of the question to achieve even one of these three items in such a short time. However, the visit to ESNT by Prof Wycech, an internationally recognised authority on these issues [7], should help to move them forward. In particular, with regard to the interpretation of the PUMA Project results.

## References

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