Form 2

# Achievement report of Dispatching Researchers Abroad Program in 2022

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| (1) Researcher exchange program<br>(2) Dispatching young researchers abroad program<br>(○ for either) | Research reference number : R1 |
| Purpose | Initiation and preparation of ATLAS SUSY analyses towards Run 3 of the LHC. Organization of the ATALS SUSY workshop as incoming coordinator |
| Country /institute/schedule | Switzerland, CERN |

The purpose of the travel was threefold:

**1- Design and preparation of the SUSY search program for Run 3 of the LHC**

The preparatory work to initiate the search program for Run 3 was successfully completed. Multiple analyses are already analysing the first runs of newly recorded data and a large suite of searches is defined and are progressing in the understanding of experimental challenges and theoretical considerations. The work culminated in a dedicated SUSY plenary meeting with invited theorists, where new signatures, models, and ideas for Run 3 were discussed. Dedicated follow-up meetings are being held within the subgroups with theorists to refine those ideas.

**2- Organization of the ATLAS SUSY workshop**

The 2022 SUSY workshop was a great success, with 70 in-person participants plus remote participation up to a total of 140 participants.

SUSY workshop 2022 at CERN :

The workshop spanned over four full days and included invited presentations by high- profile theorists such as John Ellis. All presentations were followed by lively discussions and great progress was made in the review of limitations and shortcomings of our Run 2 searches, as well

as the areas of highest potential over the next years.

After two years of hiatus due to the pandemic, the event was very well received and participants benefited strongly from the in-person interaction. Due to the success we have already received multiple expressions of interests by institutes to host next-year's workshop.

**3- Collaboration and contribution to ongoing analyses such as the RPV SUSY search in multi-jet events**

The stay at CERN also allowed a strong development of the machine-learning aspects within the RPV multi-jet analysis. I profited from the close contact with other members of the team, as well as machine-learning experts from the University of Geneva, to converge on the architectural choices and analysis strategy for this analysis. The strong developments over the last months has allowed the analysis to move from the early design phase to the final review steps in a very short time, enabling a timely publication during the first half of 2023.

In summary, the main objectives of the stay were accomplished in the three areas, and I profited strongly from my presence at CERN to improve the collaboration with theorists and the involvement of the SUSY group as a whole.