

# 15th International Conference on Muon Spin Rotation, Relaxation and Resonance



Contribution ID: 207

Type: Poster

## The Muon Spectroscopy Computational Project

*Tuesday, 30 August 2022 18:40 (20 minutes)*

This poster presents an overview of the software tools and techniques that have been developed as part of the Muon Spectroscopy Computational Project (MSCP). The MSCP is an initiative that currently includes: (a) the Muon Group at ISIS; (b) the Scientific Computing Department; (c) the UK Software Sustainability Institute and (d) Members of the Galaxy platform. The main objective of the MSCP is to support users of muon sources via the development of a sustainable and user-friendly set of software tools and a software platform that can be used for interpreting muon experiments.

Currently, the MSCP has developed and is maintaining the following software tools:

- **pymuon-suite**: a Python library that can be used to estimate potential stopping sites for the  $\mu^+$  and the muonium.
- **pm-nq**: can be used to estimate the quantum effects on the muon in accordance with the harmonic approximation.
- **muspinsim**: used for studying the spin dynamics of a system of a muon and other spins. You can simulate LF, ZF, TF and ALC experiments. One of the important features of this tool is that it can be run in parallel and it can also be used for fitting experimental results.
- **Mudirac**: can be used for the prediction of frequencies and probabilities of transition between energy levels of muonic atoms.

These tools can be easily downloaded and installed and, as they have been designed in modular way, they can be combined to tackle different problems related to muon science.

**Primary authors:** LIBORIO, Leandro (Scientific Computing Department, Rutherford Appleton); Dr STURNIOLO, Simone (Scientific Computing Department, STFC, UKRI, UK); Mr CHADWICK, Eli (Scientific Computing Department, STFC, UKRI, UK); MUDARADDI, Anish (STFC); Dr BELTRAN, Alejandra Gonzalez (STFC)

**Presenter:** LIBORIO, Leandro (Scientific Computing Department, Rutherford Appleton)

**Session Classification:** Posters

**Track Classification:** New techniques