



Contribution ID: 70

Type: Oral

Muon Galaxy – an open web platform for computational muon science

Thursday, September 22, 2022 4:40 PM (20 minutes)

The Muon Spectroscopy Computational Project (MSCP) is an initiative that currently includes members of the Theoretical and Computational Physics Group and the Data and Software Engineering Group in the Scientific Computing Department, STFC and members of the Muon Group at ISIS, STFC. 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. We are relying on the Galaxy platform to achieve some of these goals.

Galaxy is an open, web-based platform for accessible, reproducible, and transparent computational research. It originated in the bioinformatics community but now spans many research domains. The Galaxy interface allows users to run analysis workflows, preserve them in a reproducible way, and share or publish them, all without the need to know programming or the command line.

Muon Galaxy is where these two projects meet. The MSCP develops several command-line software tools for muon science, and the Galaxy platform is ideal for providing a graphical interface to these tools. We (members of the MSCP) will present our tools, our work integrating those tools into the Galaxy platform, and our progress launching Muon Galaxy as an STFC service available to all.

We will also demonstrate the Muon Galaxy interface and show how the platform's features help us to reliably reproduce published results. We'll discuss our ideas and plans for connecting Muon Galaxy up to other infrastructure such as STFC's computational resources and public repositories for materials science data.

Finally, we'll promote a new materials science Galaxy subcommunity to connect with others with an interest in applying Galaxy to X-ray, neutron, and muon science and materials science in general.

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Track Classification: NOBUGS 2022