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A Tool to Simulate Muon Stopping Fractions in Hydrostatic Pressure Cells.

External parameters have been shown to be a powerful tool for tuning the electronic or magnetic ground state of a material. Hydrostatic pressure is a widely used external parameter but can lead to issues in the experimental procedure, such as a large background or spurious responses. Specifically, within muon spin rotation (µ+SR), a significant share of the incoming muons can stop inside the pressure cell instead of the sample, giving a large background signal, and with non-magnetic samples the signal from the sample can be lost inside the background, with it being difficult to extract within the fit. This all makes it incredibly difficult to align the muon momentum to the sample. In response to these issues, we have developed a tool to aid in simulating muon stopping fractions with the use of pySRIM. The setup is specifically designed for the setup at the GPD spectrometer in the µE1 beamline at the Paul Scherrer Institute. This is presented as a GUI, so that users can easily calculate the stopping fractions of their samples for various muon momentums in order to be able to fit their data and align their sample.

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