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# EVA: A User-Friendly Analysis Package for Negative Muon Elemental Analysis

The science program of elemental analysis is a rapidly expanding area, with applications ranging from cultural heritage to energy materials to advanced manufacturing. Negative muons are an excellent tool for determining the composition of a material, non-destructively, as a function of depth. EVA (Elemental, Visualisation and Analysis) is a new software package that is user-friendly and easily expandable [1]. A key requirement of the software is to have a simple interface, this removes potential barriers for data analysis, as many users in this area will have diverse backgrounds. EVA utilises SRIM/TRIM to optimise the experimental setup and utilises a MuDirac and the IAEA databases for the identification of muonic X-ray peaks and gamma emissions, respectively [2,3,4]. EVA can also fit the data, either individual peaks or model fitting and has an advanced element identification. This utilises a most probable method and will include Machine Learning (MuspecML) [5]. In this presentation, we will summarise the important features and future work.

[1] GitHub - ISISMuon/EVA: Data analysis software for MuX https://github.com/ISISMuon/EVA
[2] Ziegler et al, NIM B, 268, 1818, (2010)
[3] Sturniolo et al, X-ray spectrometry, 50, 180, (2021) https://doi.org/10.1002/xrs.3212
[4] IAEA live Chart of Nuclides, https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html
[5] Foxley et al, submitted to JOSS

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