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Large scale data analysis for the operations side of neutron scattering

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Recording neutron data on an event base is current state of the art, as is recording the data produced by the many sensors and probes (temperatures, pressures, voltages, etc.) distributed throughout both the neutron scattering instruments and the wider facility. The enormous archives of data present a great opportunity to apply large scale data analysis techniques to verify expected correlations and explore unexpected ones. In this presentation, I will describe some of our results in doing this, ranging from moderator poison/decoupler burnup monitoring to the nonlinear influence of the proton beam power on the neutron production[1] and instrument detector dead time identification. Furthermore, I will talk about the methods we have used so far, some of the more recent improvements, and present ideas of what might be possible once more sophisticated analysis methods are utilized.

[1] T. Hügle, E. B. Iverson, and F. X. Gallmeier, “Beam power nonlinearity: Twice the power, but not twice the neutrons?,” J. Phys.: Conf. Ser. 1021(1), 012070 (2018).

Poster back-up

Yes

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