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Application of science-informed AI in experimental particle physics and neuroscience

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Accelerator-based experiments in particle physics and medical experiments in neuroscience generate petabytes of data, where well-defined questions could be answered by intense computing analysis, however, new correlations may remain hidden in the huge data-sea. On the other hand, physics/neuroscience-informed AI/ML can help to discover new connections, integrating seamlessly data and theoretical models, even in partially understood, uncertain and high-dimensional contexts. During last years both scientific disciplines were explored and investigated intensively in the Wigner RCP. The methodical cross fertilization will be reported, especially focusing on applications of neural network-based regression methods in data sets from particle physics and neuroscience.

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Session Classification: 4.1 Pattern recognition, Image analysis & Uncertainty quantification

Track Classification: Session B